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SACRAMENTO AREA EMPLOYMENT & LAND USE PROJECTIONS

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Prepared For
City of Sacramento

By
Angus McDonald & Associates, Inc.

In Association With
George S. Nolte and Associates

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SACRAMENTO AREA
EMPLOYMENT & LAND USE
PROJECTIONS

Prepared For:

City of Sacramento

By

Angus McDonald & Associates, Inc.
Berkeley, California

In Association With

George S. Nolte and Associates
Sacramento, California

January, 1982
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TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION AND SUMMARY	1
II. EMPLOYMENT PROJECTIONS	6
A. Employment Base Trends	6
1. Export Employment	6
2. Shift and Share Analysis	7
B. High-Technology Employment - Existing Trends	12
C. Summary of Existing Regional Employment Projections	12
1. <u>Planning For Development In South Placer County</u>	13
2. <u>The State Critique of the Gruen Study</u>	14
3. <u>South Placer Study Critique</u>	15
4. <u>Growth Concepts Issue Paper</u>	15
5. <u>Employment Development Department 5-Year Projection</u>	15
6. <u>California Growth in the 1980's - Update 1981</u>	16
7. <u>Progress Report on Industrial Development Strategy Report</u>	16
8. <u>Other Studies</u>	16
D. McDonald & Associates Projections	16
1. Trend Projections	17
2. Enhanced High-Technology Projection	17
E. City Capture Rate	20
III. DEMOGRAPHIC IMPLICATIONS OF EMPLOYMENT FORECASTS	23
A. Occupational and Income Implications	23
B. Sources of Participation in the Labor Force	24

TABLE OF CONTENTS (Continued)

	<u>Page</u>
IV. LAND USE CONSIDERATIONS	28
A. Land Demand	32
1. Land Demand Based Upon Employee Estimates	28
2. Land Demand Based Upon High-Technology Industry Expansion Plans	33
B. Land Supply	33
1. Supply of Industrially-Designated Land	34
2. Criteria for Determining the Suitability of a Site for High-Technology	34
3. Areas Desirable for High-Technology Industries	36
4. Quantity of Suitable Land Available for High-Technology Industries	37
C. Land Demand Vs. Land Supply	45
1. Regional Demand vs. Regional Supply	45
2. City Demand vs. City Supply	47
APPENDIX A: EXPORT EMPLOYMENT AND SHIFT/SHARE ANALYSIS	54
APPENDIX B. INPUT/OUTPUT MODEL METHODOLOGY	60
REFERENCES	

LIST OF TABLES AND FIGURES

		<u>Page</u>
Table I-1	Comparison of Employment Forecasts Sacramento Region, 1980-2000	5
Table II-1	Export Employment Sacramento SMSA vs. California	8
Table II-2	Export Employment Sacramento SMSA vs. United States	8
Table II-3	Employment Shift & Share Analysis Sacramento SMSA 1970-1980 Compared to California	10
Table II-4	Employment Shift & Share Analysis Sacramento SMSA 1970-1980 Compared to United States	11
Table II-5	Historic 10-Year High-Technology Job Growth Sacramento SMSA, California, and the United States	13
Table II-6	Sacramento SMSA Employment Growth Projection - Trend	18
Table II-7	Sacramento SMSA Employment Growth Projection - Enhanced High-Technology	19
Table II-8	Sacramento SMSA's Share of Projected High-Technology Job Growth 1980-2000	21
Table II-9	City of Sacramento Employment Capture Rate	22
Table III-1	Sacramento SMSA Area Annual Wage Rates by Industry and Occupation	24
Table III-2	Employee Potential From Currently Underemployed Population	27
Figure IV-1	Employee Density	29
Figure IV-2	Land Demand at Various Employee Densities	31

LIST OF TABLES AND FIGURES (Continued)

The City of Sacramento is currently revising its General Plan. A decision about appropriate land use policies depends on a decision about demand for commercial and industrial space. A	Page
Table IV-1 Acres Demanded - Sacramento SMSA	32
Trend Scenario: High-Technology Growth	32
Figure IV-3 Industrial Areas Desirable for High-Technology Industries	39
Table IV-2 Areas Suitable for High-Technology Development - Vacant Acres	40
Table IV-3 Acres Suitable for High-Technology Development - Suitable Acres	41
Table IV-4 Acres Suitable for High-Technology Development Within SMUD Service Area/Not Within the SMUD Service Area	42
Table IV-5 Supply of Land Suitable for High-Technology Sacramento SMSA	43
Figure IV-4 Supply of Land Suitable for High-Technology Sacramento SMSA	44
Figure IV-5 Regional Demand vs Regional Supply Land Suitable for High-Technology	46
Table IV-6 Land Suitable for High-Technology Development Alternatives City of Sacramento	50
Figure IV-6 Land Suitable for High-Technology Development Alternatives City of Sacramento	51
Table IV-7 Acres Demanded - City of Sacramento	52
Figure IV-7 Land Demand vs. Supply Alternative Capture Rates - City of Sacramento	53

I. INTRODUCTION AND SUMMARY

The City of Sacramento is currently revising its General Plan. A decision about appropriate land use policies depends on a decision about demand for commercial and industrial space. A related issue concerns the relationship between increased employment in the city and increased population. During the planning process, the question was raised about the potential draw in the Sacramento area compared to other regions for high-technology industries, and whether an increase in the supply of desirable commercial and industrial land will directly and proportionately increase the rate of population growth.

McDonald & Associates was asked to analyze growth in employment and consider probable relationships between employment growth and population increase. The analysis was prepared for the Sacramento region (i.e. the Sacramento Standard Metropolitan Statistical Area (SMSA) which includes Sacramento, Yolo, and Placer Counties) and for the City of Sacramento.

Estimates of the following factors were prepared:

- how many jobs will be created in the Sacramento region during the period from 1980 to the year 2000
- how many of these jobs will occur in the City of Sacramento
- how many jobs will be in the high-technology sector, as well as all other sectors of the economy
- what the occupational characteristics of the new jobs will be
- how many of the new jobs will be filled by existing residents
- what land use demands will be generated by new high-technology industries.

The report is organized into four chapters:

- Chapter I presents an introduction and summary of key findings of the study.

- Chapter II analyzes existing structure and trends in the Sacramento regional economy, reviews available employment projections, and concludes with the presentation of trend and high-growth projections for the region, including estimates of the city's employment capture under each projection.
- Chapter III discusses the demographic implications of the employment projections including occupational types, sources of new workers, and population and household projections.
- Chapter IV assesses the land use implications of the high-technology employment projections including the amount of land demanded and the amount of suitable land available.

McDonald & Associates developed both a "Trend" employment projection and an "Enhanced High-Technology" employment projection. The Trend employment projection is based on the projections developed by the city, Sacramento County, various state agencies, banks, and independent organizations. The Trend projection produces an employment increase of 334,200 between 1980 and 2000 with the high-technology sector represented 28,800 employees. The Enhanced High-Technology employment projection builds upon the Trend employment projection by including an additional 51,500 base high-technology jobs, and using a regional input/output employment multiplier (developed especially for this project) to yield a total regional employment increase of 425,700 between 1980 and 2000. As shown in Table I-1, the addition of 51,500 high-technology jobs yield a total of 91,500 additional jobs throughout the Sacramento economy. (This information is shown in greater detail in Table II-6 and Table II-7.)

The employment growth in the Sacramento SMSA exceeds the statewide rate because of the unique attractive qualities attributable to the region:

- adequate land supply for industry and residential expansion
- a labor force in a state of transition from government-based to industry-based
- large employment potential from the pool of unemployed and from spouses entering the workforce
- excellent location for transportation and distribution of goods to the western states.

Types of occupation and income levels in the region would not change significantly under either projection except for an in-

creased number of workers in the operator job category under the Enhanced growth scenario. Under the Trend projection, the greatest number of new jobs would be in the following occupations:

- clerical (21% of all new jobs)
- professional/technical (15%)
- sales workers (13%)
- managers, service workers, crafts, and operatives (about 12% each).

Under the Enhanced growth projection, new jobs would be primarily for:

- clerical workers (19%)
- professional/technical and operatives (16% each)
- managers, sales, craft, and service workers (about 11% each).

Employment growth will provide opportunities for the currently unemployed and underemployed. Approximately 2,300 workers could come from a reduction of regional unemployment if the regional rate of 8.3% drops to the statewide level of 7.8% (based on a seven year average), and an additional 44,000 new workers could come from an increase in workers per household if the Sacramento ratio of 1.064 reached the ratio experienced in the Bay Area of 1.178. The 44,000 new workers from second household wage-earners would meet 13% of the jobs under trend projection to the year 2000, and about 10% under the enhanced growth projection. Thus, the increase in population per new job may be reduced. Today's population-to-employment ratio suggest 2480 new people for each 1000 new jobs. Under the assumptions stated above, this could drop to 2320 new people for each 1000 new jobs. (W-114). (It should be noted that the employment to housing rates may be altered if the future work force lives elsewhere but works in the area.)

Land demanded by the new high-technology industries moving into the region is expected to be between 480 and 960 acres under the Trend projections and between 1340 and 2680 acres under the Enhanced growth scenario. The range in the land demands estimate is due to the variation in employment density (employees per acre) experienced by function within the industry. For example, central administration, production, and research and development uses will probably occur near 50 employees per acre while warehousing will probably use around 25 employees per acre.

Approximately 4700 acres of suitable land in the SMSA is available to satisfy that demand - 8000 acres if the McDonnell-Douglas land is included. The 4700 acre estimate may even be low if favorable circumstances not accounted for in this report were to occur. For example, because time and budgetary constraints prevented a parcel-by-parcel analysis, reductions were made in

the amount of vacant land in the industrial areas which was estimated to be suitable for high-technology industries. This was done to account for, among other reasons, incompatible land uses (an important site criteria) which may exist, or may come to exist, as the area develops.

Not all of the 4700 acres of land are ready to build. However, suitable land in existing industrial areas is estimated to range between 1570 and 3100 acres. Normally, there is sufficient land in the SMSA to accommodate the land demanded under the Trend projections.

The City of Sacramento has historically captured 32% of the total growth in the Sacramento SMSA. If the city intends to capture that rate of the high-technology industries estimated to move to Sacramento by even the Trend scenario, additional attractive sites will need to be made available in the city. This can be done by approving the Delta Shores project, approving the North Natomas proposal, or by annexing the county portion of the Northgate-Norwood area.

As several of the persons interviewed in conjunction with this report pointed out, Sacramento and industrial sites in Sacramento are competing in a nationwide market for high-technology industries. To simply have land available is not enough in order for the Trend and, particularly, the Enhanced scenarios to be realized. If a policy decision is made to encourage high-technology industries to come to the Sacramento area, the best sites need to be made available and land needs to be made available in sufficient quantity to provide a wide choice of sites. If the city wants to either improve their percentage capture rate or participate in creating factors which will foster the Enhanced scenario, additional suitable lands need to be made available in the City of Sacramento for high-technology industries.

Table I-1

COMPARISON OF EMPLOYMENT FORECASTS
SACRAMENTO REGION, 1980-2000

Industrial Sector	1980		Trend Forecast 2000		Enhanced High-Technology Forecast	
	Employees (In 1000)	% Mix	Employees (In 1000)	% Mix	Employees (In 1000)	% Mix
Agriculture, Forestry, & Fisheries	9.1	2.2	11.1	1.5	11.4	1.4
Mining	0.5	0.1	0.5	0.1	0.5	0.1
Construction	19.3	4.7	39.3	5.3	44.8	5.4
Manufacturing						
Non-Durable	13.0	3.2	16.4	2.2	16.8	2.0
Durable	12.5	3.1	22.7	3.1	25.3	3.0
High-Technology	1.7	0.4	30.5	4.1	82.0	9.8
Transportation & Utilities	21.7	5.3	42.4	5.7	44.6	5.4
Wholesale Trade	17.4	4.3	33.2	4.5	36.1	4.3
Retail Trade	76.5	18.7	158.5	21.3	165.3	19.8
Finance, Insurance, & Real Estate	22.3	5.5	72.3	9.7	75.8	9.1
Services	73.4	18.0	147.2	19.8	162.0	19.4
Government	141.1	34.5	168.6	22.7	169.6	20.3
TOTAL	408.5	100.0%	742.7	100.0%	834.2	100.0%

Source: California Employment Development Department (R-10) and McDonald & Associates

II. EMPLOYMENT PROJECTIONS

A. Employment Base Trends

The Sacramento Standard Metropolitan Statistical Area (SMSA) comprises Sacramento, Yolo, and Placer Counties. The Sacramento SMSA economy supported 400,200 jobs in 1980 (first quarter average) (R-10)*, an increase of 48% from 1970 employment of 271,300. The government, trade and services sectors accounted for the dominant portion of these jobs. Lesser shares were found in the manufacturing, finance, insurance and real estate, transportation, communication and utilities, and construction sectors. Minor portions of total employment were found in the agriculture, forestry, fisheries, and the mining sectors.

Strengths and weaknesses of the Sacramento SMSA economy was analyzed by determining export employment and shift in the region's share of employment. Export employment refers to the sectors of the regional economy that export their products or services rather than servicing the local population. These sectors tend to have higher portions of jobs in the SMSA than the same sectors provide in the nation (or state). Shift shares analyzes the sectors which achieve higher relative growth rates in the region compared to the same sectors in other "competitive" regions. The export employment analysis indicates which sectors are specialties of the SMSA while shift and share analysis indicates which sectors are improving their relative positions.

1. Export Employment

A measure of relative strength of an industrial sector can be ascertained by calculating its export employment component. The number of jobs is calculated for a given sector that would be expected if the SMSA performed exactly like the national (or state) average for the same sector. The "expected jobs" are subtracted from the actual jobs for each sector. A positive export employment component signifies a greater level of specialization in the SMSA relative to the nation (or state).

*Underscored numbers in parentheses refer to references listed at the end of this report.

Tables II-1 and II-2 show these calculations for the Sacramento SMSA versus the statewide and nationwide averages. The tables show that a higher proportion of jobs are found in the government and trade sectors than are found in the same sectors in other regions (i.e. the SMSA is a net exporter of government and trade sector jobs). Manufacturing, finance, insurance, real estate, and services within the SMSA, though employing an increasing number of people, do not produce as many jobs as would be expected on the basis of national and state averages.

The weakest area of the regional economy compared to both the state and the nation is manufacturing. If the Sacramento area had the same proportion of jobs in this industry as the state, it would have 53,000 more jobs. Compared to the national proportions, the region is 65,000 jobs "poorer". It should be noted that Sacramento's high proportion of government jobs skews these comparisons somewhat.

2. Shift and Share Analysis

Shift/share analysis provides a measure of the dynamic element of an economy. Local employment growth is measured against nationwide and statewide growth across all sectors and against specific sectors. The actual growth in local employment can be explained by the sum of three components:

- National (State) Growth Component. This component represents the employment increase from 1970 to 1980 that would have occurred in the Sacramento SMSA if this sector had grown locally at the same rate as national (or state) employment grew across all industries.
- Industrial Mix. This component represents the change in employment in a particular sector in the Sacramento SMSA from 1970 to 1980 that would have occurred because of the difference between the national (or state) growth rate for this sector and the average growth rate across all U.S. (or California) industries.
- Competitive Share Component. This component indicates whether the Sacramento SMSA has attracted a greater or lesser share of incremental employment in the individual sectors between 1970 and 1980 than the share that other regions attracted in the same sectors. It represents the net difference between the sum of the pervious two components and what actually occurred in the Sacramento SMSA during the 1970-1980 period.

Table II-1

EXPORT EMPLOYMENT
SACRAMENTO SMSA VS. CALIFORNIA
(In 1000's of Jobs)

Industry	California Employment		Local Employment SMSA	
	% Total	Amount	% Total	Export Component
Agriculture, Forestry, & Fisheries	2.6%	5.3	1.3%	- 5.1
Mining	0.4	0.4	0.1	- 1.2
Construction	4.3	20.0	5.0	2.8
Manufacturing	19.9	26.3	6.6	-53.3
Transportation & Utilities	5.4	21.5	5.4	- 0.1
Wholesale & Retail Trade	22.3	92.6	23.1	3.3
Finance, Insurance, & Real Estate	6.0	21.7	5.4	- 2.3
Services	21.3	71.6	17.9	-13.7
Government	17.8	140.8	35.2	69.6
TOTAL	100.0%	400.2	100.0%	

Source: State of California, Employment Development Department (R-11, R-10, R-15) and McDonald & Associates

Table II-2

EXPORT EMPLOYMENT
SACRAMENTO SMSA VS. UNITED STATES
(In 1000's of Jobs)

Industry	United States Employment		Local Employment SMSA	
	% Total	Amount	% Total	Export Component
Agriculture, Forestry, & Fisheries	3.1%	5.3	1.3%	- 7.1
Mining	0.9	0.4	0.1	- 3.2
Construction	5.9	20.0	5.0	- 3.6
Manufacturing	22.8	26.3	6.6	- 65.0
Transportation & Utilities	6.5	21.5	5.4	- 4.5
Wholesale & Retail Trade	20.3	92.6	23.1	11.4
Finance, Insurance, & Real Estate	6.0	21.7	5.4	- 2.3
Services	29.2	71.6	17.9	- 45.3
Government	5.3	140.8	35.2	119.6
TOTAL	100.0%	400.2	100.0%	

Source: State of California, Employment Development Department (R-15, R-61) and McDonald & Associates

The Sacramento SMSA shift share comparisons are illustrated on Table II-3 relative to state employment figures and on Table II-4 relative to national employment growth. One example of the three components of shift and share analysis can be seen in the agriculture sector. The region experienced an actual decline in agricultural jobs from 7,800 in 1970 to 5,300 in 1980. Statewide employment during this same period grew by 38.9%. Thus, in the state growth component column in Table II-3, the figure 3,000 represents the number of new jobs in agriculture that would have occurred in the region had this sector grown at the state-wide, overall average. Statewide, however, agriculture grew at a slower rate than the rest of the economy, in fact, experiencing a decline of 9.6% in employment during the ten-year period. The industrial mix column indicates that if Sacramento's agricultural sector had declined by 9.6% (as did this sector statewide), it would have 3,700 fewer jobs than if it had grown by 38.9% as the overall state economy did. (The net loss would have been 700 jobs.) In the final column, the region's actual performance over the ten year period is compared. In the case of agriculture, the region's competitive share was in fact 1,800 jobs fewer than the sum of its state and industrial mix share. (It lost 2,500 jobs instead of only 700 jobs.) In other words, while the agriculture industry fared poorly statewide compared to overall growth, it fared even poorer in the Sacramento SMSA.

Significant trends in the Sacramento region's economy can be found from the shift/share analysis. In the manufacturing sector, for example, the region is well below state and national employment growth components (an actual growth of 4,200 jobs compared to 8,600 based on state average growth for all industries and compared to 5,000 based on nationwide growth). The region also performed below the statewide growth for this sector. However, the region had a competitive share gain in this sector compared to the entire country.

Agriculture and manufacturing are the only two industries in which the Sacramento region experienced a competitive loss compared to statewide growth rates in the various sectors, and agriculture is the only area of loss compared to national shares by industry.

In the wholesale and retail trade industry, the region enjoyed a major boom, with a competitive share 12,200 jobs over the national share. Construction, finance, insurance and real estate, services, and government industries in the region also performed well above state and national growth rates for these sectors.

Table II-3

EMPLOYMENT SHIFT & SHARE ANALYSIS
SACRAMENTO SMSA 1970-1980¹
COMPARED TO CALIFORNIA²

	Sacramento SMSA				Percentage ³ Change In California Employment 1970/1980	Employment Change Related To:		
	Employment 1970	Employment 1980	Total Change	Percentage Change		Employment State Growth	Change Industrial Mix	Competitive Share
Agriculture	7.8	5.3	- 2.5	- 32.1%	- 9.6%	3.0	- 3.7	- 1.8
Mining	0.1	0.4	0.3	300.0	28.0	0.0	0.0	0.3
Construction	11.5	20.0	8.5	73.9	42.7	4.5	0.4	3.6
Manufacturing	22.1	26.3	4.2	19.0	28.5	8.6	- 2.3	- 2.1
Transportation & Utilities	17.4	21.5	4.1	23.6	17.3	6.8	- 3.8	1.1
Wholesale & Retail Trade	54.6	92.6	38.0	69.6	46.1	21.2	4.0	12.8
Finance, Insurance Real Estate	10.3	21.7	11.4	110.3	62.2	4.0	2.4	5.0
Services	38.6	71.6	33.0	85.5	69.1	15.0	11.7	6.3
Government	108.9	140.8	31.9	29.3	25.6	42.4	- 14.5	4.0
TOTAL:	271.3	400.2	128.9	47.5%	38.9%	105.5	- 5.8	29.2

Notes:

- 1) Employment amounts are in thousands
 2) Example: In the agriculture sector employment declined 2500 jobs during the decade. The shift/share analysis "explains" the decline as follows:

Expected base growth - (ie. if employment in agriculture had had kept up with the state):	+ 3,000
Decline of the industry compared to other industries:	- 3,700
Decline in Sacramento's competitive position:	- 1,800
Total:	2,500

- 3) California Employment:

	1970	1980	Percentage Change
Agriculture	289.3	261.6	- 9.6%
Mining	31.4	40.2	28.0
Construction	303.0	432.3	42.7
Manufacturing	1,558.0	2,002.8	28.5
Transportation/Utilities	459.1	538.5	17.3
Wholesale & Retail Trade	1,530.8	2,236.1	46.1
Finance, Insurance, & Real Estate	374.5	607.4	62.2
Services	1,266.2	2,141.6	69.1
Government	1,424.7	1,789.7	25.6%

Source: McDonald & Associates based on Employment Development Department data (R-11, R-10, R-15)

Table II-4

EMPLOYMENT SHIFTS & SHARES
SACRAMENTO SMSA 1970-1980¹
COMPARED TO UNITED STATES²

	Sacramento SMSA				Percentage Change In U.S. Employ- ment ³ 1970/1980	Employment Change Related To:		
	Employment 1970	Employment 1980	Total Change	Percentage Change		Employment National Growth	Change Industrial Mix	Competitive Share
Agriculture	7.8	5.3	- 2.5	- 32.1%	- 16.9%	1.8	- 3.1	- 1.2
Mining	0.1	0.4	0.3	300.0	70.1	0.0	0.1	0.2
Construction	11.5	20.0	8.5	73.9	18.1	2.6	- 0.5	6.4
Manufacturing	22.1	26.3	4.2	19.0	6.3	5.0	- 3.6	2.8
Transportation & Utilities	17.4	21.5	4.1	23.6	17.9	4.0	- 0.9	1.0
Wholesale & Retail Trade	54.6	92.6	38.0	69.6	30.7	12.5	4.3	21.2
Finance, Insurance Real Estate	10.3	21.7	11.4	110.3	46.9	2.4	2.5	6.5
Services	38.6	71.6	33.0	85.5	38.9	8.8	6.2	18.0
Government	108.9	140.8	31.9	29.3	15.7	24.8	- 7.7	14.8
TOTAL:	271.3	400.2	128.9	47.5%	22.8%	61.9	- 2.7	69.7

Notes:

- 1) Employment amounts are in thousands
2) See Table II-3 for example
3) United States Employment:

	1970	1980	Percentage Change
Agriculture	3,566.0	2,962.0	- 16.9%
Mining	515.0	876.0	70.1
Construction	4,814.0	5,685.0	18.1
Manufacturing	20,737.0	22,039.0	6.3
Transportation/Utilities	5,317.0	6,268.0	17.9
Wholesale & Retail Trade	14,996.0	19,593.0	30.7
Finance, Insurance, & Real Estate	3,942.0	5,789.0	46.9
Services	20,266.0	28,158.0	38.9
Government	4,473.0	5,176.0	15.7%

Source: McDonald & Associates based on Employment Development Department data (R-15 & R-61)

Appendix A presents a sector-by-sector discussion of the region's export employment and shifts and shares compared to state and national employment figures.

B. High-Technology Employment - Existing Trends

Although the high-technology industry has in the past been a small subcategory within the manufacturing sector, its importance is growing, especially within California and the Sacramento region. ("High-technology includes office, computing, and accounting machines, communications equipment, electrical components and accessories, and measuring equipment".) Table II-5 illustrates the growth trends in this field for the region, state, and nation from 1970 to 1980.

In 1970, the Sacramento SMSA had only 600 jobs in the high-technology manufacturing sector; in 1980 it had 1,700. The region experienced an accelerating growth rate, with an annual average of close to 16% in this sector in the 1977-80 period (this was due to a small base number in 1977). During the same late 1970's period, California's high-technology employment was growing at an annual rate of about 11% while the national growth in this sector was averaging only 6%.

In terms of relative share of the national employment in this field, Sacramento has a very small but an increasing proportion. California, on the other hand, is capturing over 20% of the total jobs in high-technology nationwide. (Sacramento represents 0.08% of the national total and 0.4% of the state total in this field as of 1980.)

During 1981, the prospect of several major firms moving into the region may generate a new growth spurt in high-technology employment. The next section summarizes several recent studies projecting employment growth in this field, as well as several economy-wide projections for the region.

C. Summary of Existing Regional Employment Projections

Seven existing studies have projected employment growth relevant to the Sacramento region. Four of these focus exclusively on growth in the high-technology manufacturing sector, while three are comprehensive, covering the entire economy. The studies also cover different geographic areas and time periods. These seven studies are summarized briefly below, including a discussion of the assumptions and limitations of each.

The four studies focusing on high-technology tend to build on the Gruen Gruen analysis of the Route 65 Bypass. The remaining three studies which cover the all-employment sectors tend to use the Employment Development Department (EDD) analysis done in 1979 as a base for updating and refining new information.

Table II-5

HISTORIC 10-YEAR HIGH-TECHNOLOGY¹ JOB GROWTH
SACRAMENTO SMSA, CALIFORNIA, AND THE UNITED STATES
(In Thousands of Jobs)

	1970	1977	1980	Average Annual Percent Growth		Percentage Share of United States		
				1970-1977	1977-1980	1970	1977	1980
Sacramento	0.6	1.1	1.7	9.05%	15.62%	.04%	.06%	.08%
California	247.0	304.3	418.0	3.03	11.16	15.30	17.70	20.30
United States	1615.1	1722.2	2063.0	.92%	6.2 %	100.00%	100.00%	100.00%

Note:

- 1) Sacramento employment sector includes all SIC 35-machinery except electrical. This is the sector that Hewlett Packard & Shugart are classified in.

California and United States sector include SIC: (R-35)

- 357 - office, computing, and accounting machines
- 366 - communication equipment
- 367 - electrical components and accessories
- 38 - measuring equipment

Source: California Employment Development Department (R-11, R-10, R-15) and McDonald & Associates

1. Planning For Development In South Placer County, by Gruen Gruen & Associates (March, 1981)

The agreement between the state and local governments in South Placer County concerning the proposed Route 65 Bypass called for, among other things, an estimate of the impact of planned increase in employment in high-technology sectors. In turn, the study by Gruen Gruen & Associates (R-25) generated alternative projections and critiques.

The Gruen study projects employment growth in the high-technology manufacturing between 10,000 to 15,000 manufacturing jobs in South Placer County in the year 2000. The projection is limited to South Placer County and to the high-technology industry (a subcategory within the durable goods section of the manufacturing sector). The study does not provide any breakdown of the employment projections into five or ten year segments, giving only one estimate for the year 2000.

This projection of new jobs in the high-technology sector is based on an analysis of employment generated primarily by two large firms moving into the area. Hewlett Packard is expected to generate 5,000 jobs, and Shugart is in the process of employing

approximately 2,000 people. Coupled with other jobs in this .e sector, the Gruen study estimates that approximately 10,000 jobs will be created in the near future and that an additional 5,000 jobs would probably be generated in the South Placer County area between now and the year 2000.

Though the study projects the 15,000 new jobs as noted above, the bulk of the Gruen analysis is devoted to the impacts of potential employment growth using entirely hypothetical growth rates of 30,000, 60,000, or 120,000 new jobs in the high-technology sector in South Placer County. Using these hypothetical benchmarks for the year 2000, the study evaluates the potential effects on other sectors of the economy, including government, housing, private sector, service, transportation, air quality, etc.

2. The State Critique of the Gruen Study by the California Office of Economic Policy (A critique was prepared of the Gruen study providing details on secondary employment and employment projections by 1985 (R-6).)

This analysis estimates that 21,000 new electronics manufacturing jobs will be created in South Placer County by the year 2000. Like the Gruen study, this projection is limited to the South Placer County area and to the high-technology manufacturing employment sector. It does, however, provide a breakdown, with approximately 6,900 jobs expected by the year 1985 and the remaining 14,000 jobs being added between 1986 and 2000.

This study uses the Gruen Gruen & Associates' analysis as an initial source, but adds new information on electronics firms planning to move into the area, information that was not available at the time of the Gruen study. This study also augments the Gruen analysis with projections of secondary employment growth effects based on the California Department of Water Resources' Input/Output Model of California. Using the Gruen study's hypothetical benchmark of 30,000 new jobs in the high-technology industry by the year 2000, the state applies the California Input/Output Model's multipliers for the computer communications, electronics, and miscellaneous electronics products sectors. This multiplier of 2.889 (or 1.889 additional jobs throughout the statewide economy for every new job in the electronics industry) yield a total new employment of 86,650 jobs generated by the year 2000. It must be noted, however, that this multiplier represents additional employment throughout the state. Some of these secondary new jobs would occur in South Placer County or the larger Sacramento region, but the majority would probably occur outside the region.

3. South Placer Study Critique by the Sacramento County Office of Economic Development (The County developed a regional allocation of jobs in the high-technology manufacturing sector (R-51).)

This study estimates growth of approximately 30,000 jobs in the high-technology manufacturing sector for the entire Sacramento SMSA during the period from 1980 to 2000. This study expands upon the previous two projections by developing a regional allocation of new jobs generated for the region. Thus, the Gruen study projection of 10,000 to 15,000 new jobs in South Placer County yields a 30,000 growth in high-technology employment for the SMSA region.

4. Growth Concepts Issue Paper, by the City of Sacramento Planning Department (The Department prepared its own projections for the SMSA (R-44).)

Based on the finding of the South Placer study critique by the county, as well as the Employment Development Department's (EDD) growth estimates and Department of Finance population projections, this city study assumes an employment growth between 30,000 and 76,000 jobs in the high-technology industry between 1980 and the year 2000 in the three-county Sacramento SMSA.

This study also includes a land use inventory in the city and then estimates land absorption rates in the region over the 20-year period.

5. Employment Development Department 5-Year Projection (The Department prepared a five year projection of employment by industry and occupation categories for the Sacramento SMSA (R-14).)

This analysis includes all sectors of the economy, with employment projections broken down into major Standard Industrial Classification (SICs). Government employment is included in the private sector category corresponding most closely to the government occupation being considered. Thus, the public sector does not have its own line item.

The EDD analysis covers the entire Sacramento SMSA for the period from 1980 to 1985 and projects a total of 86,000 new jobs in all sectors. Of these, 3,800 are projected to be in the high-technology manufacturing sector which produces office, computing, and accounting machines.

The EDD developed its growth projections on the basis of trend analysis from the 1976 to 1979 period and interviews with potential employers considering moving into the area. The EDD used its own internal statistical sources.

6. California Growth in the 1980's - Update 1981, by the Center for Continuing Study of the California Economy (The Center prepared its projection of overall employment in the SMSA and for high-technology jobs sepcifically (R-19).)

Like the EDD study, this report covers the entire economy and the entire Sacramento SMSA. It projects a growth of 125,000 new jobs in the region between 1980 and 1990. Of these, it estimates 10,000 new jobs will be in the high-technology sector. (The Center's analysis does not provide projections broken down for all sectors, but only for selected basic industries.)

This study is based on data from EDD and the Bureau of Labor Statistics, as well as from internal sources and interviews with potential employers in the region.

7. Progress Report on Industrial Development Strategy Report by the Sacramento County Policy Planning Commission (The Commission prepared ten year projections for 1980-1990 in December of 1981 (R-53).)

This county study similarly projects employemnt growth economy-wide and for the entire Sacramento SMSA. Like the Center's study, it covers the period from 1980 to 1990. Based on trend analysis and on interviews (and data from the studies above), the County has projected a total of 168,400 new jobs in the region by 1990, with 15,000 of these in the high-technology sector. This study includes a breakdown of all new jobs by sector.

8. Other Studies

Other studies generating employment projections of the area include Bank of America, Security Pacific Bank, Wells Fargo Bank, and the First Interstate Bank (R-33, R-29, R-32). In general, the bank projections rely on the EDD projections for generating future employment trends and tend to emphasize state trends with minor sections on events in the Sacramento region.

D. McDonald & Associates Projections

Based on a review of the foregoing reports, as well as the shift/share analysis in the Sacramento economy discussed in the first section of this chapter, McDonald & Associates has derived a range of projections of employment growth in all sectors of the Sacramento SMSA region for the period from 1980 to 2000. These projections are shown on Tables II-6 and II-7. A breakdown is provided for 1985 and 1990. These breakdowns are based on the assumption that the number of new jobs in each sector will be spread evenly over the 20-year period.

Table II-6 follows "trend" projections, with an adjustment for the high-technology sector based on the estimates of recent studies, while Table II-7 illustrates the effect of greatly increased growth in the high-technology sector. Each of these projections is discussed below.

1. Trend Projections

The projections in Table II-6 are based primarily on the trends and data contained in the EDD and county studies for employment growth throughout the economy, extending the increase in jobs in each sector up to the year 2000. The high-technology sector, uses the projection of approximately 28,800 new jobs in the region by the year 2000. Although this is almost twice the growth in this sector than if EDD projections were simply extended, it appears warranted on the basis of the new information and studies since 1979.

As this table illustrates, a total of 334,000 new jobs will be generated throughout the Sacramento SMSA economy by the year 2000, based on "trend" projections. The bulk of this growth in employment will occur in the sectors of retail trade (82,000 jobs, or about 25% of all the new jobs), services (73,000 jobs, of 22% of the total growth), and finance, insurance, and real estate (50,000 jobs, or 15%). The 28,800 new jobs in the high-technology manufacturing sector would represent less than 9% of the total employment growth, and only about 4% of the total number of jobs in the region by the year 2000.

(The implications of the estimates for occupations are discussed later in this report.)

2. Enhanced High-Technology Projection

The trend projections represent a conservative estimate of employment growth for the region. A number of factors may contribute to higher growth in the high-technology sector. McDonald & Associates has developed a second scenario in which 51,500 additional jobs (for a total of about 80,300 new jobs) might be created in this sector by the year 2000.

Table II-7 shows the effect of this enhanced growth in the high-technology field on employment in all sectors. Because each new job in high-technology will produce spill-over effects of new jobs in other sectors (new services, sales, trade, etc. as a result of the new employees and industry), the total effect of the enhanced growth scenario is 425,700 new jobs in the region, about 91,500 more than under trend projections. The regional employment multiplier of 1.71 for secondary jobs created, and for the spread of these new secondary jobs to all sectors, was derived from the Sacramento input/output model. This means that for every new high-technology job another .71 jobs are created elsewhere in the Sacramento economy. An explanation of the input/output model, which was developed especially for the present project, is covered in Appendix B.

Table II-6

SACRAMENTO SMSA
EMPLOYMENT GROWTH PROJECTION - TREND

DESCRIPTION	Current 1980 (x1000)	Percent Mix (%)	Employment 1985 (x1000)	Employment 1990 (x1000)	Employment 2000 (x1000)	Percent Mix (%)	Change 1980-2000 (x1000)	Percent Mix (%)
<u>Industry</u>								
Agriculture, Forestry, & Fisheries	9.1	2.2%	9.6	10.1	11.1	1.5%	2.0	0.6%
Mining	0.5	0.1	0.5	0.5	0.5	0.1	0.0	0.0
Construction	19.3	4.7	24.3	29.3	39.3	5.3	20.0	6.0
Manufacturing								
Non-Durable	13.0	3.2	13.9	14.7	16.4	2.2	3.4	1.0
Durable	12.5	3.1	15.0	17.6	22.7	3.1	10.2	3.1
High-Technology	1.7	0.4	8.9	16.1	30.5	4.1	28.8	8.6
Transportation & Utilities	21.7	5.3	26.9	31.0	42.4	5.7	20.7	6.2
Wholesale Trade	17.4	4.3	21.3	25.3	33.2	4.5	15.8	4.7
Retail Trade	76.5	18.7	97.0	117.5	158.5	21.3	82.0	24.5
Finance, Insurance, & Real Estate	22.3	5.5	34.8	47.3	72.3	9.7	50.0	15.0
Services	73.4	18.0	91.9	110.3	147.2	19.8	73.8	22.1
Government	141.1	34.5	148.0	154.9	168.6	22.7	27.5	8.2
TOTAL	408.5	100.0%	492.0	575.6	742.7	100.0%	334.2	100.0%
<u>Occupation</u>								
Professional Technical	75.6	18.5%	88.1	100.6	125.5	16.9%	49.9	14.9%
Managers, Officials, Proprietors	44.1	10.8	54.3	64.4	84.7	11.4	40.6	12.1
Sales Workers	33.9	8.3	44.7	55.6	77.2	10.4	43.3	13.0
Clerical Workers	88.7	21.7	106.4	124.1	159.6	21.5	70.9	21.2
Crafts & Kindred Workers	53.5	13.1	63.1	72.7	92.0	12.4	38.5	11.5
Operatives	35.1	8.6	44.7	54.3	73.5	9.9	38.4	11.5
Service Workers	54.7	13.4	64.8	75.0	95.3	12.8	40.6	12.2
Laborers	15.1	3.7	17.8	20.5	25.9	3.5	10.8	3.6
Farmers & Farm Workers	7.8	1.9	8.1	8.4	9.0	1.2	1.2	0.4
TOTAL	408.5	100.0%	492.0	575.6	742.7	100.0%	334.2	100.0%

Source: California Employment Development Department (R-10) and McDonald & Associates)

Table II-7

SACRAMENTO SMSA
EMPLOYMENT GROWTH PROJECTIONS - ENHANCED HIGH-TECHNOLOGY

	Current 1980 (x1000)	Percent Mix (%)	Employment 1985 (x1000)	Employment 1990 (x1000)	Employment 2000 (x1000)	Percent Mix In 2000 (%)	Change 1980-2000 (x1000)	Percent Mix (%)
<u>DESCRIPTION</u>								
<u>Industry</u>								
Agriculture, Forestry, & Fisheries	9.1	2.2%	9.7	10.3	11.4	1.4%	2.3	0.5%
Mining	0.5	0.1	0.5	0.5	0.5	0.1	0.0	0.0
Construction	19.3	4.7	25.5	32.0	44.8	5.4	25.5	6.0
Manufacturing								
Non-Durable	13.0	3.2	14.0	14.9	16.8	2.0	3.8	0.9
Durable	12.5	3.1	15.7	17.9	25.3	3.0	12.8	3.0
High-Technology	1.7	0.4	21.7	41.8	82.0	9.8	80.3	18.9
Transportation & Utilities	21.7	5.3	27.4	33.1	44.6	5.4	22.9	5.4
Wholesale Trade	17.4	4.3	22.1	26.8	36.1	4.3	18.7	4.4
Retail Trade	76.5	18.7	98.7	120.9	165.3	19.8	88.8	20.8
Finance, Insurance, & Real Estate	22.3	5.5	35.6	49.0	75.8	9.1	53.5	12.6
Services	73.4	18.0	95.6	117.7	162.0	19.4	88.6	20.8
Government	141.1	34.5	148.3	155.4	169.6	20.3	28.5	6.7
TOTAL	408.5	100.0%	514.9	621.3	834.2	100.0%	425.7	100.0%
<u>Occupation</u>								
Professional/Technical Managers, Officials, Proprietors	75.6	18.5%	92.8	110.0	144.5	17.3%	68.9	16.2%
Sales Workers	44.1	10.8	55.8	67.5	90.8	10.9	46.7	11.0
Clerical Workers	33.9	8.3	46.2	58.6	83.3	10.0	49.4	11.6
Crafts & Kindred Workers	88.7	21.7	109.3	129.9	171.2	20.5	82.5	19.4
Operatives	53.5	13.1	65.7	77.9	102.3	12.3	48.8	11.4
Service Workers	35.1	8.6	52.2	69.2	103.3	12.4	68.2	16.0
Laborers	54.7	13.4	66.2	77.8	100.9	12.1	46.2	10.9
Farmers & Farm Workers	15.1	3.7	18.5	21.9	28.7	3.4	13.6	3.2
	7.8	1.9	8.2	8.5	9.2	1.1	1.4	0.3
TOTAL	408.5	100.0%	514.9	621.3	834.2	100.0%	425.7	100.0%

Source: California Employment Development Department (R-10) and McDonald & Associates)

Under this scenario, the high-technology sector would be capturing nearly as high a percentage of total new jobs in the region as retail trade and services, with roughly 20% each. By the year 2000, employment in high-technology would represent almost 10% of the total number of jobs in the region, while retail trade, services, and government sectors would represent about 20% each.

The factors that could contribute to this enhanced growth in high-technology include:

- Higher statewide growth in high-technology. Current projections, based on recent short-term downward trends in the industry, may underestimate the potential mushrooming of this dynamic industry.
- Attractive land available within the Sacramento SMSA. Sacramento already represents a desirable location, with good transportation access to major markets. The availability of large industrial sites could further spur high-technology growth in this region.
- Attractive employment base in the Sacramento SMSA. The region has a large untapped reservoir of employees, many of whom could serve in an expanded high-technology industry. The region also offers good potential for housing and other services for new employees to move into the area. (These factors will be further discussed in the next chapter of this report).

Table II-8 compares the Sacramento region's potential performance in the high-technology sector with projections of statewide and U. S. growth in this sector over the period from 1980 to 2000. Under the trend projection, the Sacramento SMSA, with 28,800 new jobs in this field, would be capturing 12.5% of the California growth and 3.2% of the nationwide growth. Under the enhanced growth scenario, the SMSA would be capturing 34.4% of state growth and 8.8% of national growth in this sector (based on current projections of state and national growth).

E. City Capture Rate

The projections in the previous section are for the Sacramento SMSA, which covers Sacramento, Yolo, and Placer Counties. There is little current information on the proportion of jobs within the SMSA captured by the City of Sacramento. Based on 1980 EDD estimates of employment by place of residence, the city's capture rate for total jobs was 32%.

McDonald & Associates' projections assumed that a low city capture rate would be a continuation of the 32% ratio of the city within the SMSA. A high city capture rate of 42% might be

achieved if the city were able to provide large amounts of attractive land and receive a greater share of the employment-generating industries moving into the region.

The projections of city employment growth under the trend and enhanced growth scenarios, based on capture rates of 32% and 42% of the SMSA, are shown in Table II-9. At the lower capture rate, the city would have between 106.9 and 136.2 thousand new jobs by the year 2000. At the higher rate, it would have between 140.4 and 178.8 thousand new jobs.

Table II-8

SACRAMENTO SMSA'S SHARE OF PROJECTED HIGH-TECHNOLOGY JOB GROWTH 1980-2000¹

	<u>Trend Projection</u>	<u>Enhanced High-Technology Projection</u>
<u>Trend Projections</u>		
Share of California Growth ²	12.5%	34.4%
Share of United States Growth ³	3.2%	8.8%

Notes:

- 1) Projections assume that 1990 to 2000 employment gain is equal to the 1980-1990 estimates.
- 2) California growth = 228,400 jobs 1980-2000
- 3) United States growth = 889,800 jobs 1980-2000

Source: Center for Continuing Study of the California Economy (R-19) and McDonald & Associates

Table II-9

CITY OF SACRAMENTO EMPLOYMENT CAPTURE RATE

	Base 1980 ¹ (x1000)	Employment at 1985 (x1000)	Employment at 1990 (x1000)	Employment at 2000 (x1000)	Change 1980-2000 (x1000)
<u>CITY CAPTURE - TREND GROWTH</u>					
Trend Capture Rate (32%) ²	130.6	157.4	184.1	237.5	106.9
High Capture Rate (42%) ³	130.6	165.7	200.8	271.0	140.4
<u>ENHANCED HIGH-TECHNOLOGY</u>					
Trend Capture Rate (32%) ²	130.6	164.7	198.7	266.8	136.2
High Capture Rate (42%) ³	130.6	175.3	220.0	309.4	178.8

Notes:

- 1) Base employment for the City of Sacramento - 32% of 408,200, or 130.6 thousand
- 2) EDD estimates city employment at 32% of Sacramento SMSA labor force
- 3) High capture rate assumes:
 - Increase in zoned industrial land within the city
 - Increased incentives for development such as:
 - Redevelopment agency financing
 - Streamlining of project approval

Source: California Employment Development Department (R-10) and McDonald & Associates

III. DEMOGRAPHIC IMPLICATIONS OF EMPLOYMENT FORECASTS

According to the McDonald & Associates' projections, the City of Sacramento will have between 106,900 and 178,900 new jobs between now and the year 2000. This chapter discusses the demographic effects of these newly created jobs: first, the occupational and income implications of the new jobs; second, the potential sources of new workers; and, third, the effects on population and new households.

A. Occupational and Income Implications

Chapter II discussed employment growth primarily in terms of sectors (or type of industry), such as high-technology manufacturing, other manufacturing, retail trade, services, government, etc. However, jobs can also be categorized by the type of occupation, such as professional/technical, manager, sales, clerical, operators, service workers, and laborers. Based on nationwide standard factors for the proportion of each type of occupation within each industry sector, Tables II-6 and II-7 also showed a breakdown of jobs by occupation for the period from 1980 to 2000, under both the trend and enhanced growth scenarios.

While the total number of new jobs in all occupations increases under the enhanced growth scenario, the operator occupational category is the only one that would grow disproportionately. Because of the greater need for machine operators in the high technology industry, there would be a need for 68,200 new workers in this occupation by the year 2000 under the enhanced growth scenario, while there would be 38,400 new operators under the trend projection. In 2000, operators would represent about 12.5% of the total work force in the SMSA under the enhanced growth scenario, and about 10% under the trend projection.

Table III-1 shows the average wage per worker in the various industrial sectors and low, high, and average wages per worker in the various occupations. The average wage of \$19,000 in the manufacturing sector is well above the overall average of \$13,600 and only slightly below the highest paying construction sector. In terms of occupations, operators (the greatest beneficiary of new jobs in the high-technology field) tend to have lower incomes than the rest of the manufacturing sector.

Table III-1

SACRAMENTO SMSA AREA ANNUAL WAGE RATES BY INDUSTRY AND OCCUPATION
(In 1980 Dollars)

<u>INDUSTRY</u>	<u>Average</u>		
Agriculture, Forestry, & Fisheries	\$10,500		
Mining	19,500		
Construction	21,000		
Manufacturing	19,000		
Transportation & Utilities	19,000		
Wholesale Trade	17,000		
Retail Trade	9,000		
Finance, Insurance, & Real Estate	13,000		
Services	6,000		
Government	\$11,000		

<u>OCCUPATION</u>	<u>Range Low</u>	<u>Range High</u>	<u>Average</u>
Professional/Technical	\$10,000	\$29,000	\$18,000
Managers	10,000	24,000	17,000
Clerical	7,000	18,000	13,000
Sales	10,000	25,000	15,000
Service	7,000	20,000	12,000
Operators	\$ 8,000	\$21,000	\$16,000

Source: California Employment Development Department (R-10; R-23)

B. Sources of Participation In The Labor Force

Workers to fill the new jobs in the region can come from four sources:

- the presently unemployed
- the presently underemployed
- young residents coming into the work force for the first time
- in-migrants.

The Sacramento SMSA currently has a total work force of 466,700 (R-10) with a seven year average unemployment rate of 8.3%. If the unemployment rate drops to the overall California rate of unemployment, which averaged 7.8% during the past seven years, this drop in unemployment of .5% would yield 2,300 new jobs - a small contribution to the total growth, but significant for the currently unemployed.

The Sacramento region has a very high proportion of underemployed people. The two main sources of underemployment are people currently in government jobs with few opportunities for promotion due to the slow growth in this sector, and spouses who are not currently working but may wish to join the labor force.

Since passage of Proposition 13 in 1977, the growth rate of both state and local governments has been drastically reduced in California. Compared to a growth rate of about 4% in government employment in the early 1970's, the future growth in all government sectors is expected to be about 1% per year. Because of this, employees currently in the government sector will have fewer opportunities for promotion. Some of these government workers will be attracted by other faster growth industries in the region, seeking jobs in the same occupational category or developing new professional skills. In addition, slow growth in Sacramento's large government sector will increase the pressure for spouses of government workers to seek a second income for their households. It is of interest to note that state government employment in Sacramento is continuing to expand slightly while the statewide average is decreasing. This is due to the closing of district offices and relocating of these offices to Sacramento.

At present, the Sacramento SMSA has an average of 1.064 wage-earners per household. This is low compared, for example, to the San Francisco Bay Area, which has a ratio of 1.178 wage earners to each household. If Sacramento spouses, under economic pressures of inflation outstripping their household income from a single wage earner, enter the labor force at the same rate as the Bay Area, there would be 44,000 more workers available.

Table III-2 shows the likely distribution of these new workers by occupation, based on Bureau of Labor statistics on correlations between the occupation of the primary wage earner and the spouse's occupation. The greatest number of these new workers from the ranks of the currently underemployed would be in the professional/technical and the clerical occupations. In total, this source of workers would fill 13.2% of the new jobs in the region over the 20-year period under trend projections, and 10.3% of the new jobs under the enhanced high technology growth projections.

The demographic bulge generated by the post-World War II "baby boom" is currently bringing a large, young adult work force into the market. Many young Sacramento residents will thus be available to fill jobs in the growing employment market, and these new workers will tend to gravitate to jobs that are in most demand. As these Sacramentans enter the labor force, however, they are apt to become new householders as well. Thus, for most purposes, these new workers will create the same land use and other needs as in-migrants.

In-migrants will account for the largest source of new workers to meet the region's employment growth. With the new workers from the currently unemployed and under-employed accounting for about 50,000 jobs, in-migrants and new resident workers will be needed to fill 284,000 jobs under the trend projection and 375,000 jobs under the enhanced growth projection.

A higher proportion of the in-migrants and young people entering the work force are likely to have two wage earner households. This is due primarily to two factors:

- A large share of the new jobs in the region are in the clerical, technical/professional, and operator categories, and people in these occupations tend to have two household income sources.
- The younger and more mobile worker who would tend to migrate will have a greater likelihood of having two income sources.

Table III-2

EMPLOYEE POTENTIAL FROM CURRENTLY UNDEREMPLOYED POPULATION

OCCUPATION	Employees From Local Population Base	Capture Share of 1980-2000 Growth	
		Trend	Enhanced High-Technology
Professional/Technical	9,010	18.1%	13.1%
Managers	4,730	11.7	10.1
Sales	3,670	8.5	7.4
Clerical	9,570	13.5	11.6
Crafts	5,760	15.0	11.8
Operatives	3,770	9.8	5.5
Service	5,880	14.5	12.7
Labor	1,610	14.9	11.8
TOTAL	44,000 ¹	13.2%	10.3%

Note:

- 1) Currently underemployed spouses becoming second household wage earners. Same ratio of wage earners as the Bay Area.

44,000 available from current housing base

Bay Area employee to housing ratio - 1.178

Sacramento employee to housing ratio - -1.064

Potential Sacramento employee per household - .114

Current housing stock - 383,800

Potential employees 44,000

Source: Bureau of Labor Statistics (R-62), California Employment Development Department (R-10), Association of Bay Area Governments 1979 Projections (R-2), and McDonald & Associates

IV. LAND USE CONSIDERATIONS

A. Land Demand

"The key to attracting high-technology firms is understanding their basic needs, in particular an adequate supply of labor and the flexibility to expand with a minimum of delay" (R-32). This section focuses on these two issues. First, given an adequate supply of labor, how much land is required to accommodate various levels/numbers of employees? And, second, how much land in the Sacramento region would be required for industrial expansion based on the tentative expansion plans of 89 Bay Area high-technology firms as expressed by their responses to a recent survey (R-4).

1. Land Demand Based Upon Employee Estimates

a. Methodology

A fairly common method of estimating land requirements is by calculating the employee density or the number of employees per acre.

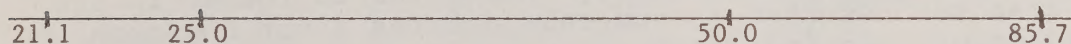
One method of calculating employment density is through the use of average number of employees per work category. There are five basic categories of work in the high-technology industries: central administration, production, research and development, warehouse, and "other" (R-58). Central administration consists of management, personnel, budgeting, sales, and clerical. Production consists of assembly lines and/or rooms and production laboratories. Research and development is composed of market research, design, programming, and quality control. Warehousing is needed for storage and the "other" category is composed of space required for conference rooms, cafeterias, mail and copy rooms, etc.

Generally, central administration, production, and research and development will utilize 35% of the net lot area for floor space, compared to warehouses and other uses which cover 50% of the lot area with floor space. Square feet per employee is then applied to the available floor space to derive employment projections. Three hundred and five square feet per employee is required for employees in central administration, production, and research and development; 871.0 sq. feet per employee is common for warehouse and other uses. These numbers are equivalent to estimating that central administration, production, and research and development will develop at approximately 50 employees per acre while warehouse and other uses will develop at 25 employees per acre.

This method can be used to either estimate the number of industrial employees given a certain amount of land or the amount of land necessary to accommodate various numbers of employees. A main drawback to this method is that employee densities in high-technology industries can vary greatly. A survey of eight high-technology firms in Sunnyvale (R-58) indicated that employee density varied greatly from 21.1 employees/acre up to 85.7 employees per acre. It is important to note that these employment densities are per net acre and per work shift. Figure IV-1 illustrates the variation in these densities.

FIGURE IV-1

Employee Density
(Employees per Acre)



- 21.1 = Employee density for day shift, California Microwave, 1980.
- 25.0 = Employee density figure used by Sunnyvale City staff for employment projections for warehouses and other uses.
- 50.0 = Employee density figure used by Sunnyvale City staff for employment projections for central administration, production and research and development uses.
- 85.7 = Employee density for day shift, Applied Technology, 1981.

Source: George S. Nolte and Associates

Another potentially serious drawback to this estimating methodology is that firms can increase the number of employees and intensify the use of their facilities. This can occur through increasing the number of employees per shift or increasing the number of work shifts per day. Employee intensification is a fairly common occurrence because of the cyclical nature of high-technology growth. Changes in market demand can result in periods of intense manufacturing followed by slow times with

minimum production and/or layoffs. Employee intensification allows the high-technology firms to respond to these changes without major new buildings or expansion.

Utilizing an employee density figure to calculate land required for industrial use must be used with care. Generally, assuming a pattern similar to Sunnyvale, new high-technology growth will probably occur at approximately 50 employees/acre for central administration, production, and research and development uses and at 25 employees/acre for warehousing and other uses. Once the companies become established, additional growth can occur through employment intensification.

For the purposes of this report, however, we will focus on an average of 40 employees per acre.

b. Acres of Land Demanded

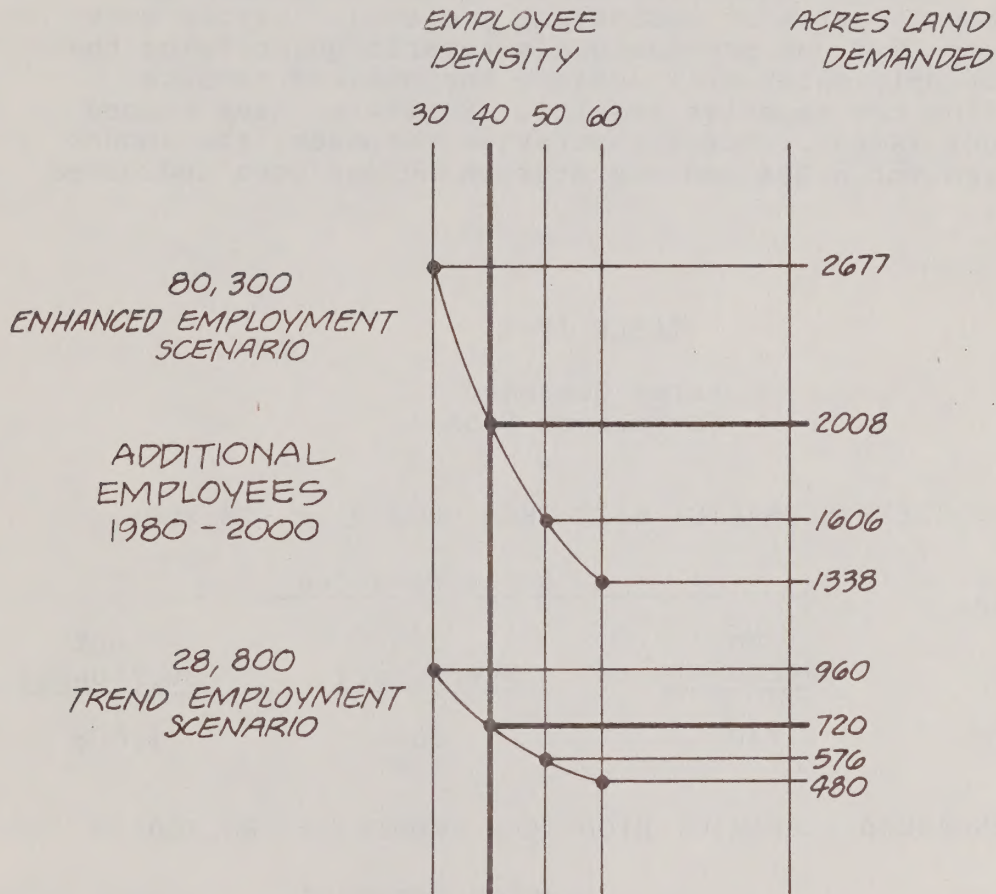
Interest expressed by high-technology industries to locate in the Sacramento area has resulted in numerous debates about how much growth could occur. As indicated in the prior sections of this report, between 28,800 and 80,300 additional high-technology employees could be working in the Sacramento area by the year 2000.

How much industrial land will need to be developed to accommodate these employees? It is extremely difficult to estimate at this time because of the unknown nature of the development. Rough estimates of land requirements are shown in the following figure and tables. At an employee density of 50 employees per acre, only 576 acres would be required to accommodate 28,800 employees. As the employee density estimate decreases to 40 or 30 employees per acre, land requirements increase to 720 and 960 acres, respectively. In order to accommodate 80,300 employees at 50 employees per acre, 1606 acres of land would need to be developed. Land requirements as the density estimates decrease to 40 or 30 employees per acre increases dramatically up to 2,008 and 2,677 acres respectively. Figure IV-2 illustrates the relationship of employee density estimates to land demand.

It is important to remember that these land requirements are estimates only. Actual development may occur at much different densities. Also, once the development has occurred, the addition of swing, graveyard and/or weekend shifts can increase total employment without additional land development.

FIG. IV-2

LAND DEMAND AT VARIOUS EMPLOYEE DENSITIES



SOURCE: GEORGE S. NOLTE
& ASSOCIATES

c. Providing an Oversupply of Industrially Designated Land

The preceding discussion dealt only with the amount of land actually required for development. As a matter of public policy, jurisdictions may desire to designate an oversupply of industrial land in order to not restrict the supply of land and unduly escalate the price of the remaining available land, and to reduce the potential for an oligopoly. Conversely, designating a gross oversupply of land can result in reduced local governmental control over the location of industrial projects. Little work has been done by land use professionals towards quantifying the amount of oversupply which will achieve the desired results without incurring the negative results. Estimates have ranged from 20% to 100% (R-63). For illustrative purposes, the amount of land required for a 20% and 40% overzoning has been indicated in Table IV-1.

TABLE IV-1

Acres Demanded
Sacramento SMSA

TREND SCENARIO: HIGH TECH GROWTH = 28,800

Employees per Acre	Acres Demanded		
	No Oversupply	20% Oversupply	40% Oversupply
40	720	864	1,008

ENHANCED SCENARIO: HIGH TECH GROWTH = 80,300

Employees per Acre	Acres Demanded		
	No Oversupply	20% Oversupply	40% Oversupply
40	2,008	2,409	2,811

Source: George S. Nolte and Associates

2. Land Demand Based Upon High-Technology Industry Expansion Plans

The High Technology Industry Site Study (R-4) surveyed high-technology industries located in the San Francisco Bay Area to obtain information about various location and site requirements. The survey format was adopted from the U. S. Department of Commerce, Bureau of the Census, Survey of Industrial Location Determinants, and included questions on number of employees, size of plant site, expected site acquisition cost, freeway/highway access, airport access, and plant type. Eighty-nine of the responding firms surveyed had tentative plans for new or expanded facilities within the next five years. Thirty-four of these firms had considered relocating somewhere within the Sacramento Metropolitan Area (Yolo, Placer, and Sacramento Counties). The total land area required for these responding firms was estimated between 503 and 1075 acres. This should be considered only a partial demand because it represents only those firms responding to the questionnaire and not necessarily all firms considering relocating to the SMSA.

The location preferences for the firms varied. Seven of the 34 firms, representing a total of 78 to 174 acres preferred to locate in a fully planned industrial park with restrictive covenants. An additional 18 firms, requiring a total of 223 to 478 acres, preferred an area zoned for light industry with on-site facilities. Of the remaining 9 firms, one of the firms, requiring 51 to 100 acres, preferred an area zoned for light industry with or without facilities; 3 firms, representing a total of 23 to 58 acres preferred either a fully planned industrial park or an area zoned for light industry. Only two firms, 6 to 14 acres, preferred a heavy industrial zone. One of the firms desiring one of the largest sites, 61 to 200 acres, preferred that the site be in a type of floating zone. They desired that the zone integrate a technology park with a surrounding mixed use residential zone to provide housing and minimize commuting distances.

B. Land Supply

The supply of suitable industrial land was determined by several techniques. Existing reports such as the aforementioned High Technology Industry Site Study and the Sacramento County Office of Economic Development's (OED) thorough report, Industrial and Commercial Development Activity in Sacramento County 1980 (R-47), provided much useful information.

The High Technology Industry Site Study provided a detailed examination of industrial sites within the City of Sacramento regarding their suitability for high-technology industries. The

dicates total acres and vacant acres available, and evaluates its suitability for various types of industries. This information was supplemented by conversations with individuals involved with encouraging high-technology industries to locate in Sacramento or concerned with related public policy issues. Seven persons primarily involved with land development, six persons involved with real estate, and six persons who are staff to or serve on public policy bodies were contacted. Their views on the desirability of specific areas for high-technology as well as on numerous related issues are reflected in the following discussion of land supply.

1. Supply of Industrially-Designated Land

According to the Sacramento County Office of Economic Development (R-47), the Sacramento County General Plan, which includes the land use plans of the cities, designates over 50,000 acres of Sacramento's land for industrial use. According to the Gruen report (R-25), 9970 acres are designated for industrial use by the cities and the county of the South Placer area. Although exact figures for Yolo County are not available, significant acreage is designated for industrial use in the West Sacramento area also. Substantial amounts of this industrial acreage is vacant and available for industrial development in the Sacramento SMSA.

Substantial acres are clearly intended for industrial use in the SMSA. However, only a portion of these are suitable for high-technology industries. The City of Sacramento authorized a study in late 1980 to ascertain the criteria by which industrial acreage was judged to be desirable by high-technology industries and, by those criteria, which sites were the most desirable in the city.

The High Technology Industry Site Study surveyed electronics firms to ascertain their growth and their expansion plans, whether they had considered Sacramento as a possible site for relocating and (A summary of the firms considering the Sacramento area as a possible place to expand and the amount of acreage involved is discussed in Section A of this chapter.

2. Criteria for Determining the Suitability of a Site for High-Technology

Industries which have recently located or have considered locating in the Sacramento area were interviewed on their criteria for choosing to locate in this region (the location criteria) and their criteria for choosing a particular site (the site criteria).

criteria resulting from the questionnaire are, in order of priority, listed below:

- government and public attitudes toward industrial growth
- reliability of energy sources
- availability of skilled labor
- housing availability and costs
- labor force costs
- availability of unskilled or service skilled labor
- quality of primary and secondary schools
- electrical energy costs
- cultural and recreation activities
- availability of truck transportation
- proximity to airport with convenient flight schedules
- college and university research and training capabilities.

The site criteria which relate to the acreage available are summarized, in order of priority, below:

- reliability of energy sources
- site acquisition costs
- public safety services (police, fire, etc.)
- proximity to airport with convenient flight schedules
- quality of nearby land development
- freeway access
- contiguous land uses
- existing industrial zone district.

Individuals contacted in conjunction with this study who are involved in encouraging high-technology industries to locate in Sacramento confirm these selection criteria and, in general, their relative importance.

Two criteria were mentioned with greater frequency than expected: electrical energy costs and the governmental attitude toward industrial growth. For this reason, locating within the Sacramento Municipal Utility District (SMUD) service area appeared to be an important criteria. Locating with the Northern California Power Agency (NCPA) service area was the second choice, while the PG&E service area was least desirable.

3. Areas Desirable for High-Technology Industries

Conversations with the individuals referenced in the previous section are focused on areas within the SMSA that were particularly desirable for high-technology industries. Although there is not complete consensus on the desirability of various sites, the following paragraphs summarize the general evaluation of the areas.

The most desirable areas were considered to be those sites adjacent to U. S. 50 and I-880. The U. S. 50 sites at Bradshaw and Sunrise received high marks for access, proximity to housing and availability of public facilities. Some of the acreage, particularly in the Sunrise area is not considered desirable because of incompatible land uses. The Northgate-Norwood area also received high marks particularly for access and for availability of services.

Of the two major industrial areas within the PG&E service area, the Folsom sites were still considered desirable because of the governmental attitude toward industrial development and because of the proximity to housing. The West Sacramento sites, conversely, were not considered desirable because of the lack of access to housing and because of incompatible land uses. The Florin-Perkins area was also not considered desirable because of incompatible contiguous land uses and because of access problems.

The Roseville area received mixed reviews. There were concerns expressed over the uncertainty of the Highway 65 Bypass and also toward the availability of housing and public facilities. Some concern was also expressed over the governmental attitudes toward industrial growth. The Lincoln area received high praise for the cooperation shown by the governmental officials, but is considered more appropriate for other types of industries other than high-technology. The Sunset industrial area is not considered suitable for high-technology because of the current Placer County

policy of encouraging only low density employees to locate there and because of unresolved wastewater disposal problems.

In summary, the most desirable areas for high-technology growth among the existing industrial areas are (in alphabetical order):

- Bradshaw
- City of Roseville
- Hazel-Folsom
- Northgate-Norwood
- Sunrise

These areas are shown in Figure IV-3.

Three other areas were frequently mentioned by the interviewees. North Natomas, Delta Shores, and the McDonnell-Douglas properties were all mentioned favorably as potential sites for high-technology industries (these areas are also shown on Figure IV-3). North Natomas and Delta Shores both received high marks for access, availability of nearby housing, the lack of incompatible contiguous existing land uses, and the size of the available parcels. North Natomas was criticized in connection with the prime agricultural lands issue.

The McDonnell-Douglas property was mentioned for its large size and undeveloped conditions. The fact that the soils are poor for agricultural purposes was viewed favorably while the lack of services, distance from U.S. 50, and the condition of the access road to U.S. 50 were cited as problems. Because of the considerable interest expressed in the property, the site will be considered in this report.

4. Quantity of Suitable Land Available for High-Technology Industries

Quantifying the land available that is both suitable and desirable for high-technology industrial growth is difficult given that time and budgetary constraints prevented a parcel-by-parcel analysis. The approach taken was to use the selection criteria and professional opinions of the interviewees to select those areas considered most desirable and under the closest scrutiny by prospective firms. For those areas an evaluation was made, which tended to be conservative, of the acreage within the area which would probably not be suitable for high-technology. Two estimates were done for those areas. The high estimate is a more optimistic view that the area would be used by high-technology firms. The low estimate tended towards known projects and high-potential sites. Both the low and high estimates should be viewed with the following qualifications in mind:

- Certain sites which are not considered desirable for high-technology industry in this analysis may, in fact, be highly desirable for a particular company with special interests or needs. The desirability factors are broad based, typical for industry as a whole, and are not necessarily true for particular companies.
- Individual parcels within an otherwise desirable area may be undesirable for a high-technology firm for a particular reason. Also, as an area develops, particular land uses may come into the vicinity which are "incompatible" with high-technology industries. This analysis accounts for that contingency by reducing the total vacant land available in a given area by 50%.

Table IV-2 summarizes the available acreage in the areas in Sacramento County and South Placer County which are available for industrial development and appear to be suitable for high-technology development for the reasons described in the previous section. Table IV-3 adjusts the vacant acres in Table IV-2 to account for sites within the area which may not be suitable for high-technology industries (note the assumptions used in reducing the acreage).

Because the importance of the SMUD service area is a distinguishing criteria, the suitable acres have been by whether or not the area is within the SMUD service area. Table IV-4 summarizes that information.

The total acreage available for high-technology development depends, then, on the criteria applied. If the question is how much land is available in existing industrial areas that are within the SMUD service area, the answer is between 837 and 1643 acres. If the question is how many acres within existing industrial areas are available in the region that are suitable for high-technology, the answer is between 1565 and 3100 acres. If the question is how many total acres in both existing industrial areas and proposed developments in the region are suitable for high-technology, then the answer is close to between 3134 to 4669 acres. If the McDonnell-Douglas properties are considered, the total acres suitable for high-technology in the region lies between 6434 and 7969 acres. The alternative development combinations are shown in Table IV-5 and are graphically illustrated in Figure IV-4.

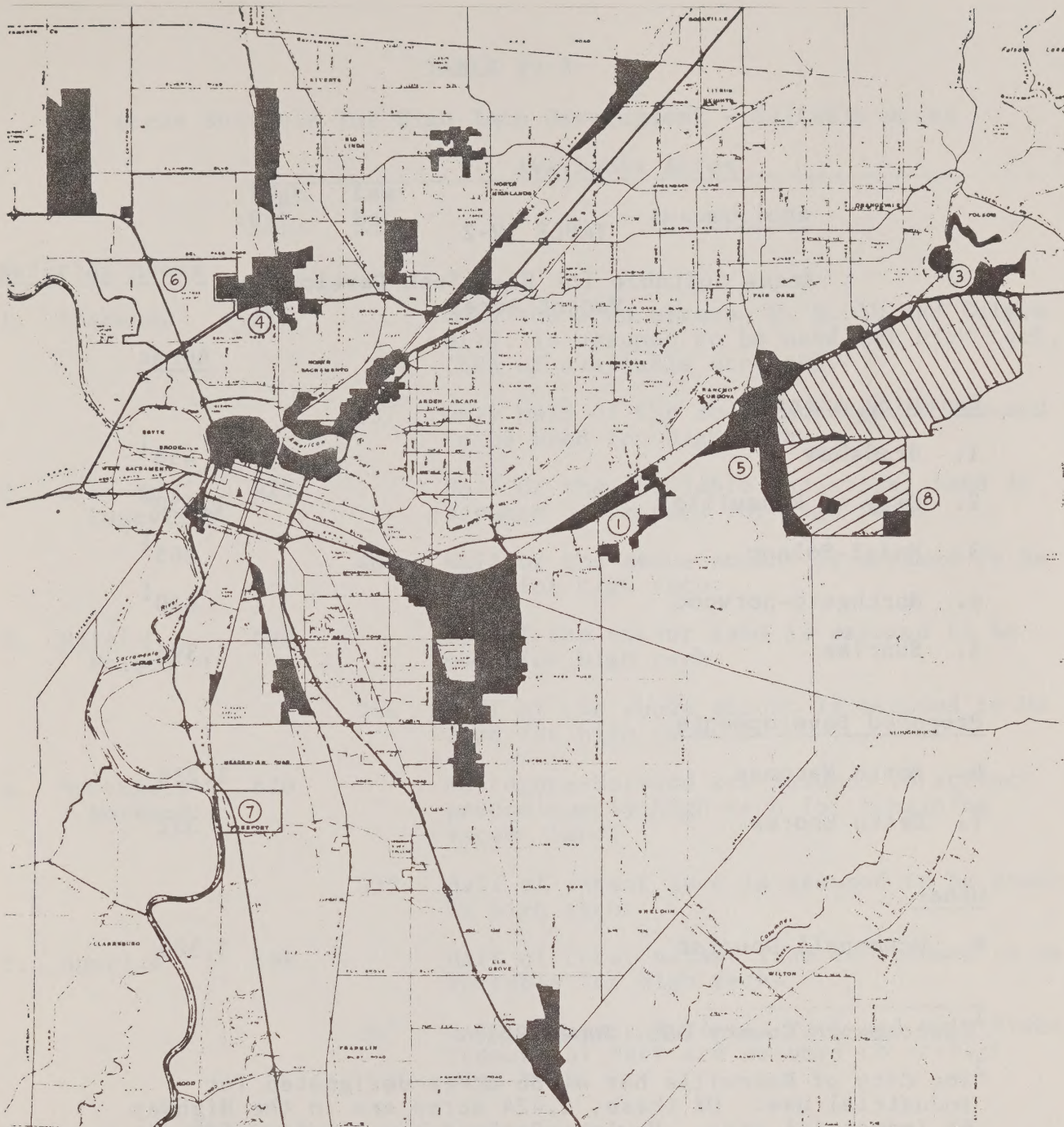


FIGURE IV-3
INDUSTRIAL AREAS DESIRABLE FOR HIGH TECHNOLOGY INDUSTRIES

EXISTING AREAS

1. Bradshaw
2. City of Roseville (not shown)
3. Hazel-Folsom
4. Northgate-Norwood
5. Sunrise

OTHER AREAS

6. North Natomas
7. Delta Shores
8. McDonnell-Douglas

(Existing areas are reproduced from Sacramento County of Office of Economic Development, Industrial and Commercial Development Activity in Sacramento County (R-47). Complete description of each area including boundary and number of vacant acres is available in that report.)

TABLE IV-2
Areas Suitable for High Tech Development -
Vacant Acres

	<u>Acres</u>
<u>Existing Areas</u>	
1. Bradshaw	458 ¹
2. City of Roseville	1,850 ²
3. Hazel-Folsom	665 ¹
4. Northgate-Norwood	670 ¹
5. Sunrise	1,396 ¹
<u>Proposed Developments</u>	
6. North Natomas	1,216
7. Delta Shores	352
<u>Other</u>	
8. McDonnell-Douglas	3,300

¹(Sacramento County OED, June 1981).

²The City of Roseville has 4,086 acres designated for industrial use. Of these, 2,424 acres are in the Highway 65 industrial area. Hewlett-Packard has acquired 500 of these acres, Electronic Arrays is proposing a development on 73 acres. Approximately 1,850 acres remain available for development.

TABLE IV-3

Areas Suitable for High Tech Development - Suitable Acres

			Available Acres
	<u>High Est.</u>	<u>Low Est.</u>	<u>Assumptions</u>
<u>Existing Areas</u>			
1. Bradshaw	275		Only the area between U. S. 50 and Folsom Blvd. is assumed to be used for high tech. (60% of available acreage).
		137	Only half of the above acreage is assumed to be used for high tech.
2. City of Roseville	925		Half of the available industrial land is assumed to be used for high tech.
		462	Half of the above amount is assumed to be used for high tech.
3. Hazel- Folsom	532		80% of the vacant land is assumed to be used for high tech.
		266	Half of the above amount is assumed to be used for high tech.
4. Northgate- Norwood	670		Northgate-Norwood are assumed to attract predominantly high tech for remaining vacant land.
		335	Half of vacant land is assumed to be used by high tech.
5. Sunrise	698		Half of total vacant land is assumed to be suitable for high tech.
		365	Only Prospect Business Park and Gold River Industrial Park are assumed to attract high tech.
<u>Proposed Developments</u>			
6. North Natomas	1,216	1,216	Based on preliminary development proposals submitted to the City's General Plan consultants.
7. Delta Shores	352	352	Based on development plan submitted to the City.
<u>Other</u>			
8. McDonnell- Douglas	3,300	3,300	The total amount recently in agricultural preserve.

Source: George S. Nolte and Associates

TABLE IV-4

Acres Suitable for High Tech Development
Within SMUD Service Area/Not Within
the SMUD Service Area

	<u>Acres Within SMUD Service Area</u>		<u>Acres NOT Within SMUD Service Area</u>	
	<u>High Estimate</u>	<u>Low Estimate</u>	<u>High Estimate</u>	<u>Low Estimate</u>
<u>Existing Areas</u>				
1. Bradshaw	275	137		
2. City of Roseville			925	462
3. Hazel-Folsom			532	266
4. Northgate- Norwood	670	335		
5. Sunrise	698	365		
<u>Proposed Developments</u>				
6. North Natomas	1,216	1,216		
7. Delta Shores	<u>352</u>	<u>352</u>		
Subtotal (#6 and 7)	1,568	1,568		
<u>Other</u>				
8. McDonnell- Douglas	<u> </u>	<u> </u>	3,300	3,300
TOTAL	3,211	2,405	4,757	4,028

Source: George S. Nolte and Associates

C. Land Demand vs. Land Supply

1. Regional Demand vs. Regional Supply

Regional demand was discussed in Section A of this chapter. Two approaches to demand were discussed - translating the forecast of employees to a demand for land through the use of an average employees per acre and tabulating the expansion plans of respondents to the recent industrial site questionnaire. These approaches resulted in several estimates of land demand. Utilizing 40 employees per acre for planning estimation results in an estimated 20 year total demand for 2008 acres in the Enhanced scenario and a demand for 720 acres for the Trend scenario. (These estimates are depicted in Figure IV-2 and are repeated as the vertical axis to Figure IV-5.) Tabulating the response to the questionnaire resulted in an estimate ranging from 503 to 1075 acres.

Regional supply was discussed in Section B of this chapter. That discussion concluded that because of the diverse characteristics of the areas and particular sites available, a single number for the acres which are suitable for high-technology industries is difficult to determine. A range of estimates for the supply of land was provided by category - within the SMUD service area or not, existing industrial area or proposed development and all categories of land.

An estimate was made of the maximum amount of suitable land available in the region. The estimate can be considered conservative because of the reduction made in the vacant acres which would actually be suitable for high-technology industries due to unknown site factors. Bearing these factors in mind, the estimate of the maximum amount of land is 4670 acres. If the McDonnell-Douglas lands are considered, the maximum amount of land available rises to 7970 acres.

This discussion is illustrated in Figure IV-4 which forms the basis for the horizontal axis of Figure IV-5.

TABLE IV-5

Supply of Land Suitable for High Tech
Sacramento SMSA
(This data is shown graphically on Figure IV-3)

<u>Development Alternative</u>	<u>Description</u>	<u>Acres</u>
1	Existing industrial areas within the SMUD service area. Low estimate.	837
2	Existing industrial areas within the SMUD service area. High estimate.	1,643
3	Existing industrial areas <u>not</u> in the SMUD service area. Low estimate.	728
4	Existing industrial areas <u>not</u> in the SMUD service area. High estimate.	1,457
5	Proposed developments within the SMUD service area. (North Natomas and Delta Shores.)	1,568
6	All existing industrial areas in the region. Low estimate.	1,565
7	All existing industrial areas in the region. High estimate.	3,100
8	All existing industrial areas and proposed developments within the SMUD service area. Low estimate.	2,406
9	All existing industrial areas and proposed developments within the SMUD service area. High estimate.	3,212
10	All land in the region available and suitable for high tech. Low estimate.	3,134
11	All land in the region available and suitable for high tech. High estimate.	4,669
12	All land in the region available and suitable for high tech (includes McDonnell-Douglas). Low estimate.	6,434
13	All land in the region available and suitable for high tech (includes McDonnell-Douglas). High estimate.	7,969

Source: George S. Nolte and Associates

FIG. IV-4

SUPPLY OF LAND SUITABLE FOR HIGH TECH - SACRAMENTO SMSA

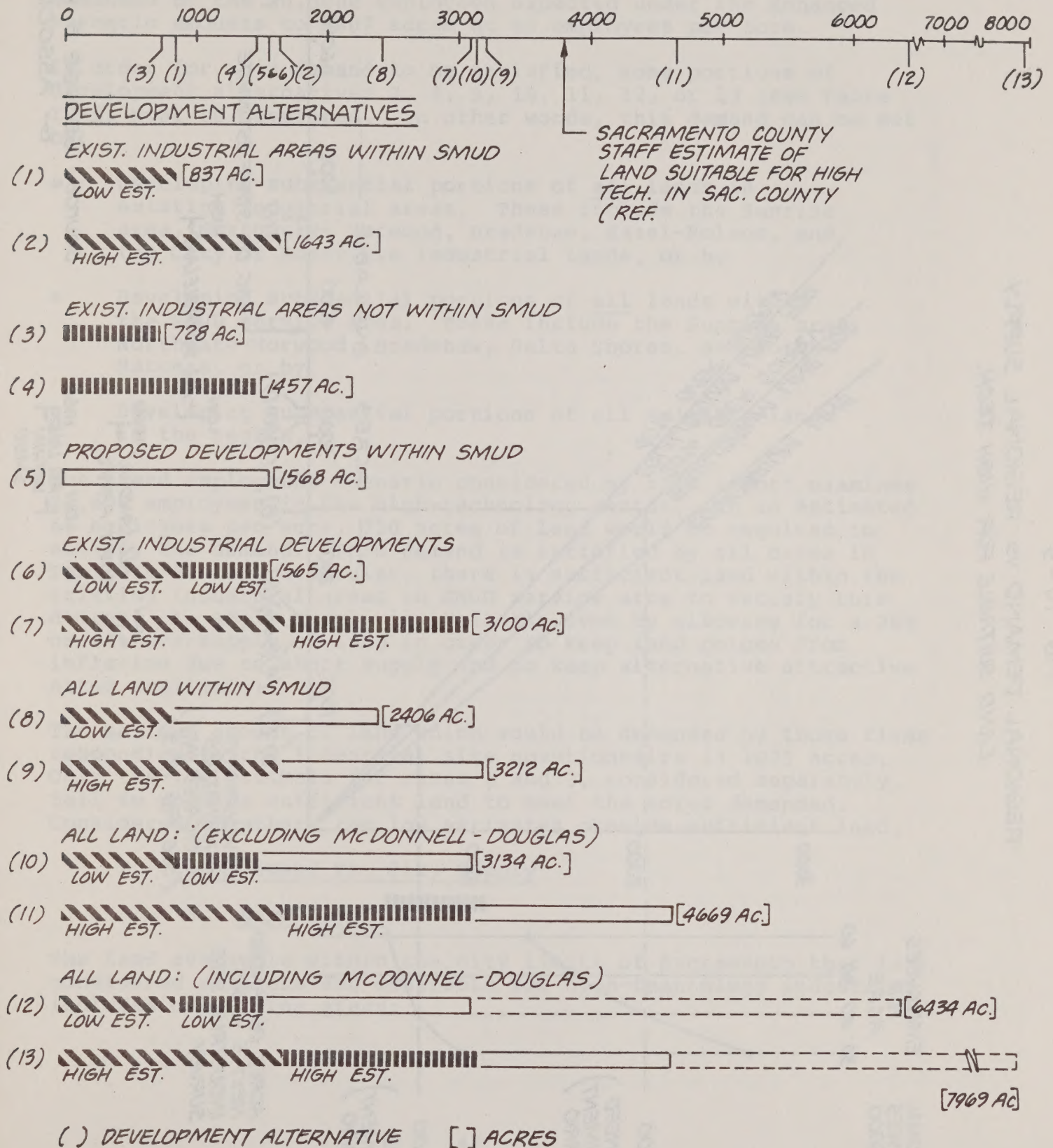


FIG. IV - 5

REGIONAL DEMAND vs. REGIONAL SUPPLY
LAND SUITABLE FOR HIGH TECH.

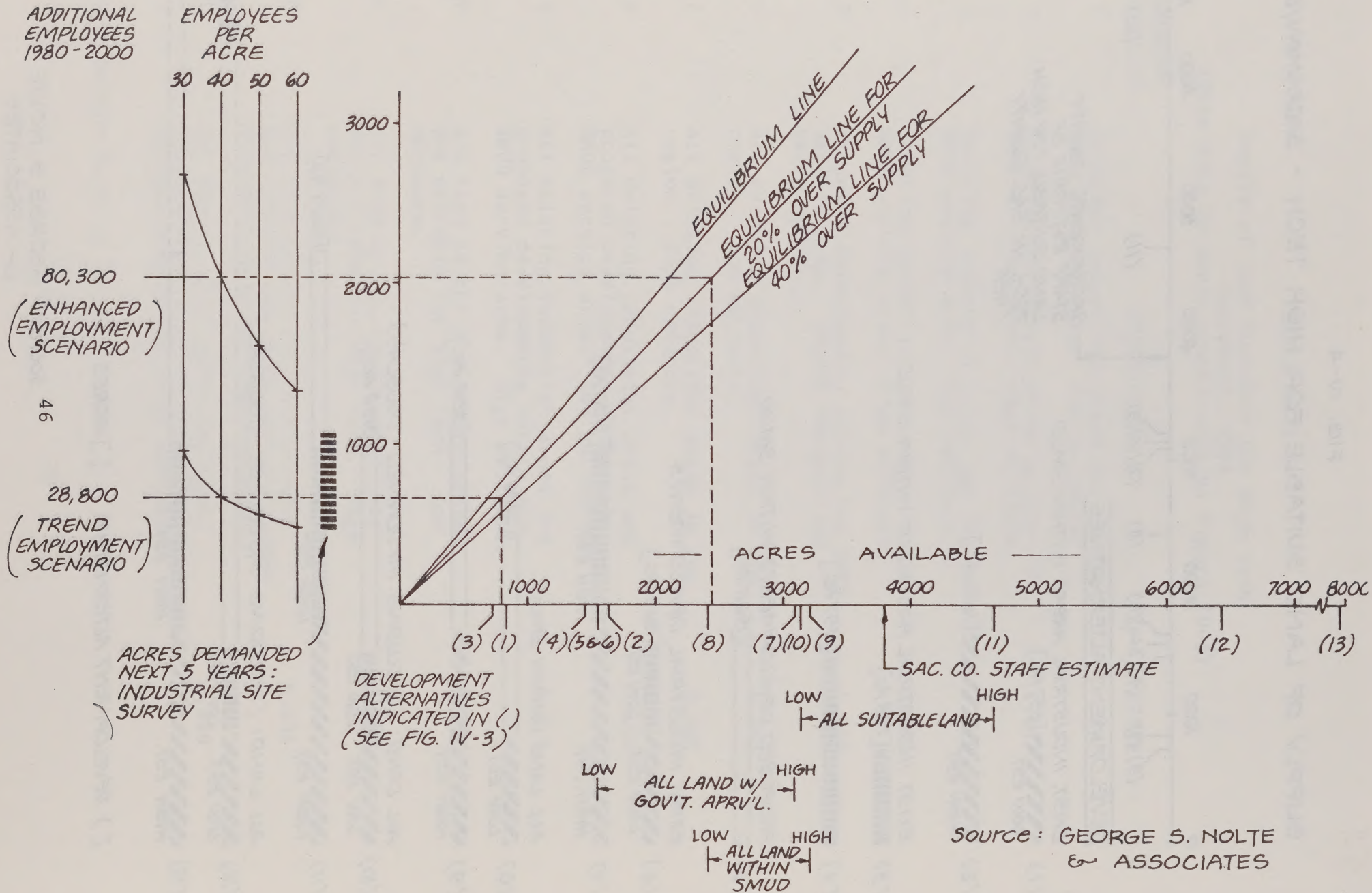


Figure IV-5 illustrates the regional demand for land suitable for high-technology industries versus the regional supply. The land demanded by the 80,3000 employees expected under the Enhanced scenario amounts to 2007 acres at 40 employees per acre.

In order for this demand to be satisfied, some portions of development alternatives 7, 8, 9, 10, 11, 12, or 13 (see Table IV-5) must be developed. In other words, this demand can be met by:

- Developing substantial portions of all lands in existing industrial areas. These include the Sunrise area, Northgate- Norwood, Bradshaw, Hazel-Folsom, and the City of Roseville industrial lands, or by
- Developing substantial portions of all lands within the SMUD service area. These include the Sunrise area, Northgate-Norwood, Bradshaw, Delta Shores, and North Natomas, or by
- Developing substantial portions of all suitable lands in the region.

The Trend employment scenario considered by this report examines 28,800 employees in the high-technology sector. At an estimated 40 employees per acre, 720 acres of land would be required to satisfy the demand. This demand is satisfied by all cases in Table IV-5. In particular, there is sufficient land within the existing industrial areas in SMUD service area to satisfy this demand. An ample supply is available even by allowing for a 20% or 40% oversupply of land in order to keep land prices from inflating due to short supply and to keep alternative attractive sites available.

The maximum amount of land which would be demanded by those firms responding to the industrial site questionnaire is 1075 acres. Only the low estimate for cases 1 and 3, considered separately, fail to provide sufficient land to meet the acres demanded. Considered together, the low estimates provide sufficient land.

2. City Demand Vs. City Supply

a. Land Supply

The land available within the city limits of Sacramento that is considered suitable and desirable for high-technology industries includes only three areas:

- Northgate-Norwood
- Delta Shores
- North Natomas.

The other industrial areas are:

- Florin-Perkins
- Richards Boulevard
- Woodlake-Arden
- El Camino-Marconi
- West of McClellan
- Franklin Boulevard
- Metro Airport
- Front Street-Broadway
- Western Pacific
- "C" Street
- Executive Airport

Many of these have industrial potential and several of those areas have excellent potential, but not for high-technology industries.

Utilizing the criteria determined in the High Technology Industry Site Study and from personal communication with persons involved with attracting high-technology firms to the area, only the three areas enjoy consistently strong interest.

If all three areas were to be fully developed with high-technology industries, 1746 acres would be provided. Since two of the areas have not been approved by the city for industrial development, only 178 acres of attractive land for high-technology industries is currently available in the city. The city has several options, including approval of additional lands or annexing the county portion of Northgate-Norwood. These alternatives are delineated in Table IV-6 and illustrated in Figure IV-6.

b. Land Demand

The city has historically captured approximately 32% of the industrial growth in the SMSA. If the city were to capture 32% of the high-technology growth expected to come to the SMSA under the Trend scenario, 9200 new employees would be added. At an estimated 40 employees per acre, 230 acres of land appropriate for high-technology industry would be required. If the city wanted to increase its historical regional share of industrial growth by 10%, and if increasing the land supply would accomplish that goal, then 302 acres of land would be needed to capture 42% of high-technology growth. Providing a 20% or 40% oversupply in the city would require 363 and 423 acres, respectively.

For the Enhanced scenario - 80,300 employees - the city's historical share of 32% of the SMSA's total growth would be 25,700 employees requiring approximately 642 acres. Providing sufficient land to allow (or encourage) an increase in the city's share to 42% would require 843 acres. Providing a 20% and 40% oversupply of land would require 1012 and 1180 acres respectively. Table IV-7 illustrates the acres demanded under various scenarios and capture rates.

c. Land Demand vs. Land Supply

Figure IV-7 illustrates the relation of land demanded to land available for high-technology development. Two examples have been marked with a dashed line. The upper example shows that 1012 acres of land will be needed for:

- the Enhanced scenario
- the high capture rate
- an assumption of 40 employees
- a 20% oversupply of land.

The horizontal axis of Figure IV-7 shows the acres provided by each development alternative. The 1012 acres required in this example, will not be provided by development alternatives No. 1, 2, 3, 5, and 8. This indicates that neither the Northgate-Norwood areas in the city or the county, nor the Delta Shores project by itself or in combination with the city portion of Northgate-Norwood, is sufficient to meet the demands of this example.

The lower dashed line indicates the land demanded by the low employment scenario with a high capture rate for the city. Again, assuming a 40 employee per acre employment density and a 20% oversupply of land, 363 acres of land will be required. This demand cannot be met by the city's existing acreage in the Northgate-Norwood area. In order to capture even this employment level the city must either approve the Delta Shores project, or approve the North Natomas proposal, or annex the county's portion of the Northgate-Norwood area.

TABLE IV-6

Land Suitable for High Tech
Development Alternatives
City of Sacramento

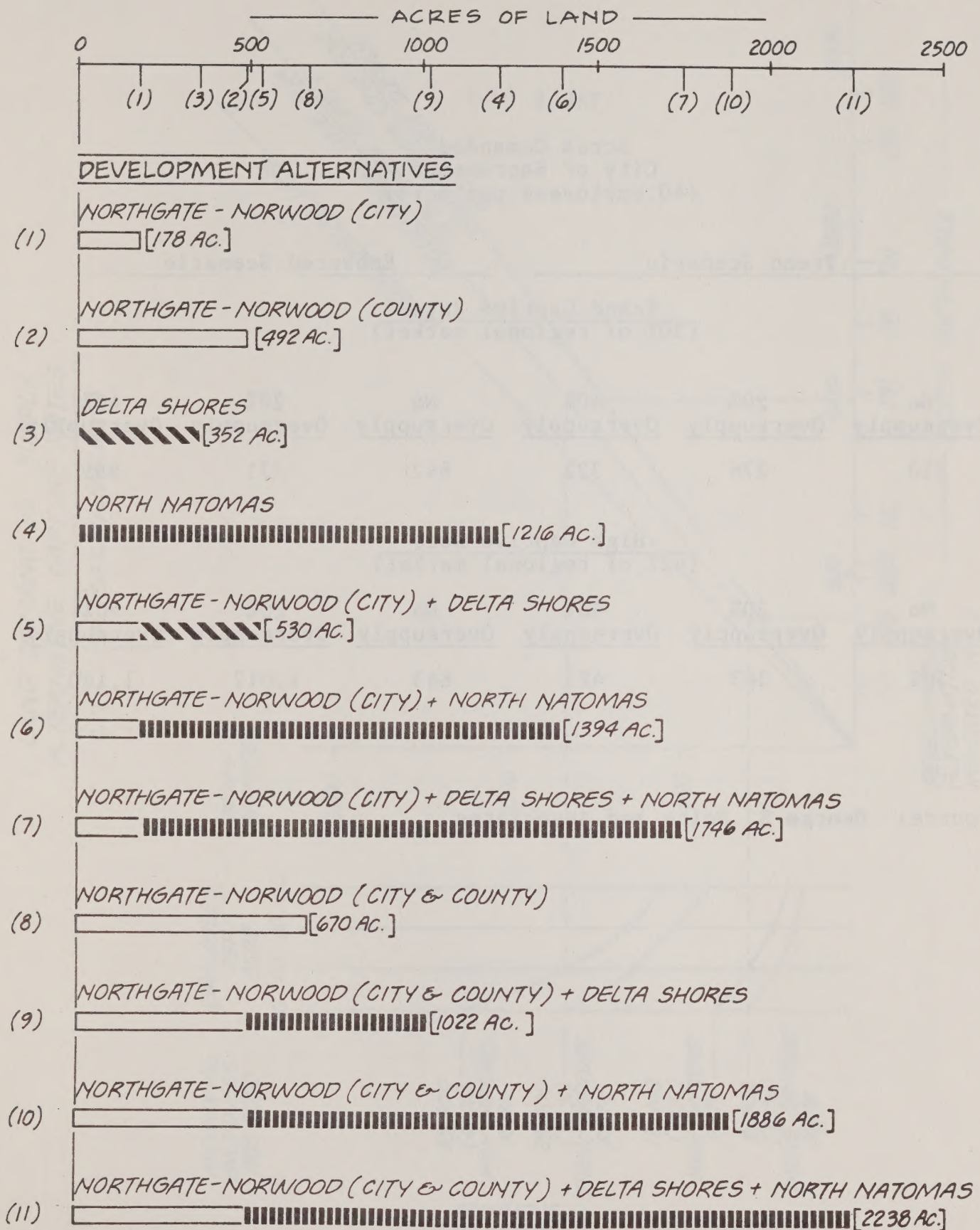
<u>Development Alternative</u>	<u>Area</u>	<u>Acres</u>
1	Northgate-Norwood (in the City)	178
2	Northgate-Norwood (in the County)	492
3	Delta Shores	352
4	North Natomas	<u>1,216</u>
	Total Acres Under Consideration	2,238
5	Northgate-Norwood (City)	178
	Delta Shores	<u>352</u>
	Total	530
6	Northgate-Norwood (City)	178
	North Natomas	<u>1,216</u>
	Total	1,394
7	Northgate-Norwood (City)	178
	Delta Shores	352
	North Natomas	<u>1,216</u>
	Total	1,746
8	Northgate-Norwood (City)	178
	Northgate-Norwood (County)	<u>492</u>
	Total	670
9	Northgate-Norwood (City)	178
	Northgate-Norwood (County)	492
	Delta Shores	<u>352</u>
	Total	1,022
10	Northgate-Norwood (City)	178
	Northgate-Norwood (County)	492
	North Natomas	<u>1,216</u>
	Total	1,886
11	Northgate-Norwood (City)	178
	Northgate-Norwood (County)	492
	Delta Shores	352
	North Natomas	<u>1,216</u>
	Total	2,238

(To simplify the table, all acreage in Northgate-Norwood is assumed to be available and attractive to high tech.)

Source: George S. Nolte and Associates

FIG. IV-6

LAND SUITABLE FOR HIGH TECH - DEVELOPMENT ALTERNATIVES
CITY OF SACRAMENTO



() DEVELOPMENT ALTERNATIVE [] ACRES

TABLE IV-7

Acres Demanded
City of Sacramento
(40 employees per acre)

Trend Scenario			Enhanced Scenario		
Trend Captive Rate (30% of regional market)					
No Oversupply	20% Oversupply	40% Oversupply	No Oversupply	20% Oversupply	40% Oversupply
230	276	322	642	771	899
High Captive Rate (42% of regional market)					
No Oversupply	20% Oversupply	40% Oversupply	No Oversupply	20% Oversupply	40% Oversupply
302	363	423	843	1,012	1,180

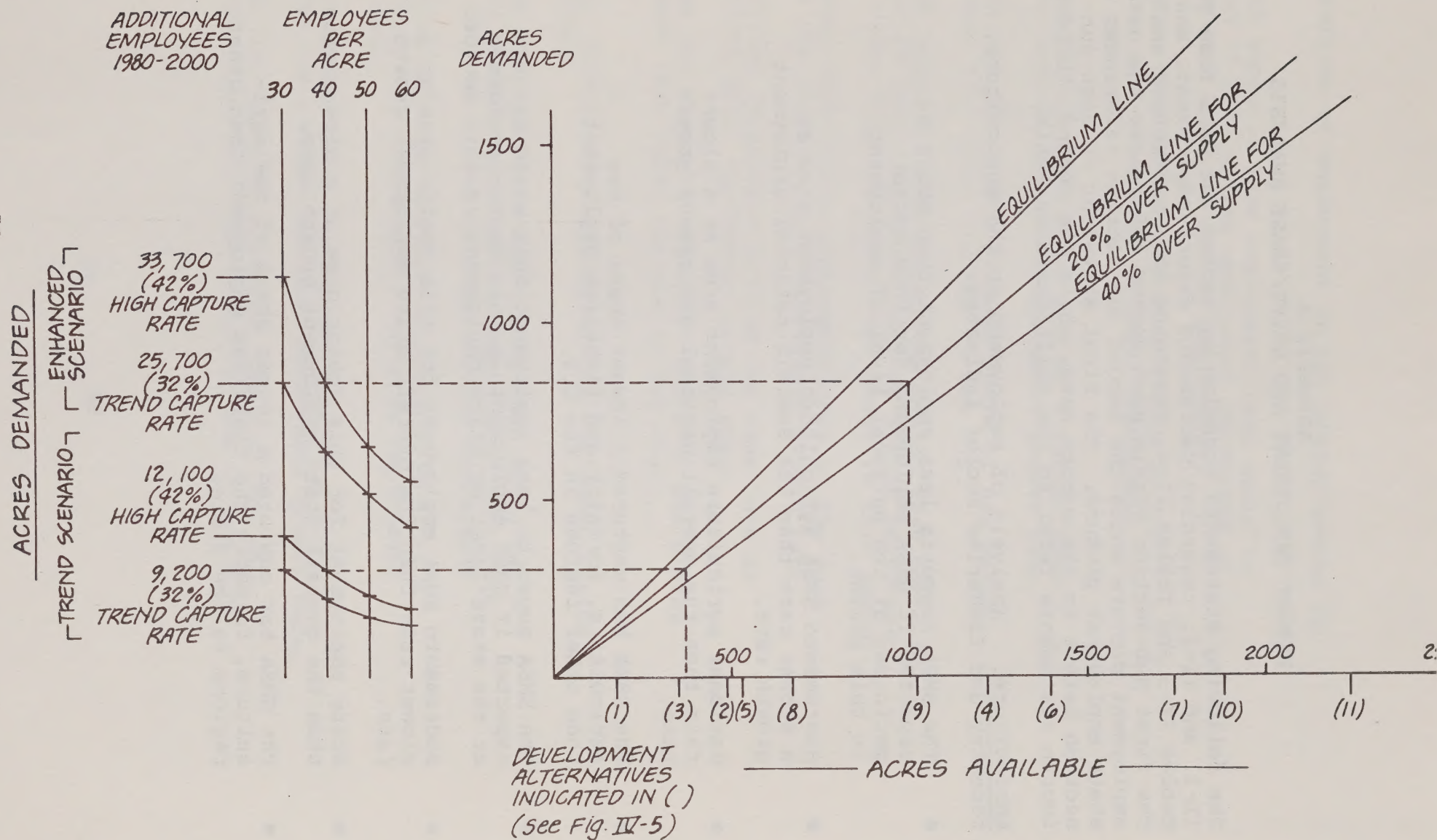
Source: George S. Nolte and Associates

FIG. IV-7

LAND DEMAND VS. SUPPLY
ALTERNATIVE CAPTURE RATES

CITY OF SACRAMENTO

53



SOURCE: GEORGE S. NOLTE & ASSOCIATES

APPENDIX A
EXPORT EMPLOYMENT AND SHIFT/SHARE ANALYSIS

The following statements organize by sector the data from Tables II-1 and II-2, regarding Sacramento export employment, and from Tables II-3 and Tables II-4, regarding the shift/share analysis. The first sub-section within each sector references the national employment picture while the second sub-section references the state employment picture. The first statement in each sub-section refers to the export base, while the second, third and fourth statements refer to the shift/share analysis.

Agriculture. Analysis of employment in the agriculture, forestry and fisheries sector indicates:

- The SMSA supports less employment than would be expected if SMSA employment for this sector performed at the national level of employment in this sector.
- Sacramento SMSA agriculture employment grew at a slower rate than the overall national employment growth rate.
- National agriculture employment grew at a slower rate than the overall national employment growth rate.
- The SMSA has captured a lesser share of new agriculture, forestry and fisheries employment than other regions in the U.S.
- The SMSA supports less employment than would be expected if SMSA employment in this sector performed at the state level of state employment in this sector.
- Sacramento SMSA employment for this sector grew at a slower rate than the overall state employment growth rate.
- State employment for this sector grew at a slower rate than the overall state employment growth rate.
- The SMSA has captured a lesser share of new agriculture, forestry and fisheries employment than other regions in the state.

Mining. Analysis of employment in the mining sector indicates:

- The SMSA supports less employment than would be expected if SMSA mining employment performed at the national level of mining employment.
- Sacramento SMSA mining employment grew at the same rate as the overall national employment growth rate.
- National mining employment grew at a faster rate than the overall national employment growth rate.
- The SMSA has captured a greater share of new mining employment than other regions in the U.S.
- The SMSA supports less mining employment than would be expected if SMSA employment in this sector performed at the state level of state employment in this sector.
- Sacramento SMSA mining employment grew at the same rate as the overall state employment growth rate.
- State mining employment grew at the same rate as the overall state employment growth rate.
- The SMSA has captured a greater share of new mining employment than other regions in the state.

Construction. Analysis of employment in the construction sector indicates:

- The SMSA supports less employment than would be expected if SMSA construction employment performed at the national level of construction employment.
- Sacramento SMSA construction employment grew at a faster rate than the overall national employment growth rate.
- National construction employment grew at a slower rate than the overall national employment growth rate.
- The SMSA has captured a greater share of new construction employment than other regions in the U.S.

- The SMSA supports more employment than would be expected if SMSA construction employment performed at the level of state construction employment.
- Sacramento SMSA employment grew at a faster rate than the overall state employment growth rate.
- State construction employment grew at a faster rate than the overall state employment growth rate.
- The SMSA has captured a greater share of new construction employment than other regions in the state.

Manufacturing. Analysis of employment in the manufacturing sector indicates:

- The SMSA supports less employment than would be expected if SMSA manufacturing employment performed at the national level of construction employment.
- Sacramento SMSA employment grew at a slower rate than the overall national employment growth rate.
- National manufacturing employment grew at a slower rate than the overall national employment growth rate.
- The SMSA has captured a greater share of new manufacturing employment than other regions in the U.S.
- The SMSA supports less employment than would be expected if SMSA manufacturing employment performed at the state level of manufacturing employment.
- Sacramento SMSA employment grew at a slower rate than the overall state employment growth rate.
- State manufacturing employment grew at a slower rate than the overall state employment growth rate.
- The SMSA has captured a lesser share of new manufacturing employment than other regions in the state.

Transportation, Communications & Utilities. Analysis of employment in the transportation, communications and utilities sector indicates:

- The SMSA supports less employment than would be expected if SMSA transportation, communications and utilities employment performed at the national level of employment for this sector.

- Sacramento SMSA employment for this sector grew faster than the overall national employment growth rate.
- National employment for this sector grew at a slower rate than the overall national employment growth rate.
- The SMSA has captured a greater share of new transportation, communications and utilities employment than other regions in the U.S.
- The SMSA supports less employment than would be expected if SMSA transportation, communications and utilities employment performed at the state level of employment for this sector.
- Sacramento SMSA employment for this sector grew at a slower rate than the overall state employment growth rate.
- State employment for this sector grew at a slower rate than the overall state employment growth rate.
- The SMSA has captured a greater share of new employment in this sector than other regions in the state.

Wholesale and Retail Trade. Analysis of employment in the trade sector indicates:

- The SMSA supports more employment than would be expected if SMSA trade employment performed at the national level of employment for this sector.
- SMSA trade employment grew at a faster rate than the overall national employment growth rate.
- National trade employment grew at a faster rate than the overall national employment growth rate.
- The SMSA has captured a greater share of new manufacturing employment than other regions in the U.S.
- The SMSA supports more employment than would be expected if SMSA trade employment performed at the state level of employment for this sector.
- Sacramento SMSA trade employment grew at a faster rate than the overall state employment growth rate.

- State trade employment grew at a faster rate than the overall state employment growth rate.
- The SMSA has captured a greater share of new trade employment than other regions in the state.

Finance, Insurance and Real Estate. Analysis of employment in the finance, insurance and real estate sector indicates:

- The SMSA supports less employment than would be expected if SMSA finance, insurance and real estate employment performed at the national level of employment for this sector.
- Sacramento SMSA employment for this sector grew at a faster rate than the overall national employment growth rate.
- National employment for this sector grew at a faster rate than the overall national employment growth rate.
- The SMSA has captured a greater share of new finance, insurance and real estate employment than other regions in the U.S.
- The SMSA supports less employment than would be expected if SMSA finance, insurance and real estate employment performed at the state level of employment for this sector.
- Sacramento SMSA employment for this sector grew at a faster rate than the overall state employment growth rate.
- State employment for this sector grew at a faster rate than the overall state employment growth rate.
- The SMSA has captured a greater share of new finance, insurance and real estate employment than other regions in the state.

Services. Analysis of employment in the services sector indicates:

- The SMSA supports less employment than would be expected if SMSA services employment performed at the national level of employment for this sector.
- Sacramento SMSA services employment grew at a faster rate than the overall national employment growth rate.

- National services employment grew at a faster rate than the overall national employment growth rate.
- The SMSA has captured a greater share of new services employment than other regions in the U.S.
- The SMSA supports less employment than would be expected if SMSA services employment performed at the state level of employment for this sector.
- Sacramento SMSA services employment grew at a faster rate than the overall state employment growth rate.
- State services employment grew at a faster rate than the overall state employment growth rate.
- The SMSA has captured a greater share of new services employment than other regions in the state.

Government. Analysis of employment in the government sector indicates:

- The SMSA supports more employment than would be expected if SMSA government employment performed at the national level of government employment.
- Sacramento SMSA government employment grew at a slower rate than the overall national employment growth rate.
- National government employment grew at a slower rate than the overall national employment growth rate.
- The SMSA has captured a larger share of new government employment than other regions in the U.S.
- The SMSA supports more employment than would be expected if SMSA government employment performed at the overall state employment growth rate.
- Sacramento SMSA government employment grew at a slower rate than the overall state employment growth rate.
- State government employment grew at a slower rate than the overall state employment growth rate.
- The SMSA has captured a larger share of new government employment than other regions in the state.

APPENDIX B

INPUT/OUTPUT MODEL METHODOLOGY

An input/output model for Sacramento County was developed by McDonald & Associates specifically for the present project (R-58). This model produces employment, income, and dollar flow multipliers by sector for Sacramento County. The employment multiplier from the high-technology sector was used to project the multiplier impact of employment growth in the Sacramento region.

It should be noted that the input/output model was prepared for Sacramento County while the base employment projections are for the Sacramento SMSA, which includes Sacramento County, Placer County, and Yolo County. Sacramento County represents 80% of the SMSA, and the multipliers generated for the county are a fair representation of the potential multipliers for the Sacramento SMSA. These multipliers represent a conservative estimate. The multipliers for the entire SMSA would undoubtedly be slightly higher than the county multipliers since Sacramento County "imports" goods and services from other counties in the SMSA.

The input/output model is based on the fundamental assumption that regional industries trade with one another. For example, a retail trade store will use a local transportation service to deliver goods and a local accounting firm to do their book-keeping. The regional input/output model not only traces the flow of goods and services among local industries, but also provides estimates of trade flow into and out of local areas for the various sectors of the model. Based on the total dollar flow in each industry category and the purchasing and expenditure characteristics of the industries, the model generates the interindustry transactions for both purchases and expenditures.

The Sacramento I/O Model is based on data from various sources:

- The expenditure and sales characteristics of each industry are developed from a set of national coefficients which have been modified to represent local inter-industry structure. The national coefficients are derived from national direct survey results conducted in 1973 and updated to 1977. These results are then modified to meet local industry structure running the model on 427 disaggregated sectors. The model is then balanced at the 427-sector level. The RAS or biproportional matrix adjustment technique was the primary method used to incorporate regional economic data and to "balance" the final Dollar Flow Table (i.e. to reconcile inevitable

inconsistencies among data. For the sake of simplicity and clarity, the model was aggregated into thirteen relevant sectors for the analysis of the Sacramento County.

- County estimates of gross domestic output and sector employment have been derived from:

Agricultural Statistics issued by the Department of Agriculture. This annual publication represents the primary source for the agricultural gross output for counties in the state. This information is also augmented with data from the Agricultural Commissioner's report issued by individual counties throughout California.

County Business Patterns issued by the Bureau of the Census. The County Business Patterns produces employment payroll data for counties, states, and the nation. The data on production worker payrolls can be used to estimate levels of industrial output for counties. This data is particularly useful in that it is broken down into four digit SIC (Standard Industrial Classifications). The major shortcoming of this information is the nondisclosure regulations requiring the Bureau of Census to withhold certain payroll and employment data if there are less than three employers in the region. To fill in these areas where there are deficiencies of data it is necessary to rely on Dunn and Bradstreet information.

The county models for the fifty-eight counties in California are then balanced to equal a statewide model. The development of county input/output models is a relatively inexpensive method of developing comprehensive information for each sector of a regional economy. However, the input/output model represents a "snapshot" of the county's economy and assumes that the purchasing patterns will change slowly over time. The data used in this model is based on information and inter-industry transactions developed in 1977.

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